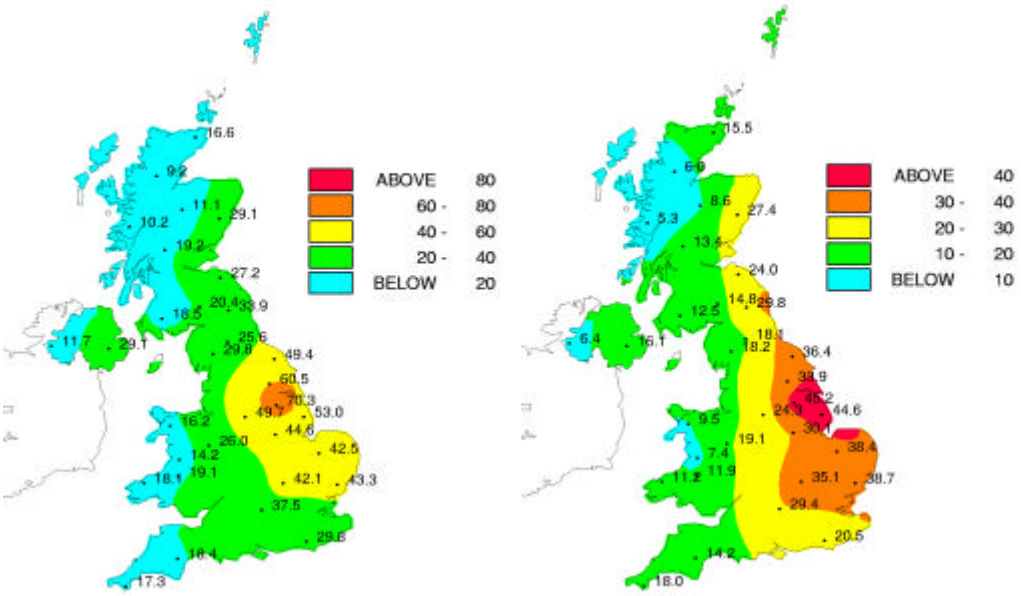
AEAT/EEQC-0143 ISSUE 2

Acid Deposition Monitoring in the UK:1986 to 1998

A report produced for Department of the Environment, Transport and the Regions



Precipitation-weighted Concentration Maps for Non Seasalt Sulphate and Nitrate (in μeq l^{-1}) for 1998

February 2000

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A report produced for Department of the Environment, Transport and the Regions

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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 UK. The measurements made and their interpretation for the period 1986 to 1997 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 United Kingdom.

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

This report is the first 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 and the complete sets of measurements made in 1998.

Highlights of the 1998 Measurement

The rainfall was higher in 1998 than the period mean (1986-1998) by between 5% (Barcombe Mills) to 47% (Tycanol Wood - *this is incorrect as the rainfall amount included an invalid measurement*) apart from the sites at Thorganby and Balquhidder which had lower rainfall. The Welsh sites were wetter and more rain fell at the elevated sites. The sites in Eastern England showed the smallest increases and had the same amount of rain as in 1997.

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

- ***Llyn Brianne (Mid Wales)***: The rainfall was 22% higher in 1998 than the period mean, resulting in lower rainwater concentrations. However, the long term trends show a decline in the amount of wet deposition for sulphate and hydrogen but a very slight increase in the deposition of the nitrogen species.

- ***Bannisdale (Lake District)***: After the three drier years of 1995, 1996 and 1997, the rainfall in 1998 was comparable to that measured in 1994 and 11% above the period mean. Although the wet deposition of sulphate and hydrogen was slightly higher in 1998, the long term trends continue to be downward. The trends in the nitrogen species show no real change.

- ***Cow Green Reservoir (N Pennines)***: Although this site is closer to the major sulphur dioxide sources than the site at Bannisdale, the annual precipitation-weighted mean concentrations of non-seasalt sulphate were slightly smaller than at Bannisdale and have shown a steadier decline over the period 1986 to 1998. While the annual deposition of sulphate has shown

greater variability, there is evidence of a decline. The deposition of nitrate has showed little change while ammonium concentrations and deposition have increased.

- ***Eskdalemuir (S Scotland)***: The measurements made in 1998 confirm the previous trends. Annual precipitation-weighted non-seasalt sulphate concentration is less variable than at most other sites and shows a steady decline, as does annual deposition. There was little change in nitrate and ammonium.

- ***Balquhidder (SW Highlands)***: The 1998 measurements continue the steady decline in the annual wet deposition of non-seasalt sulphate reported over the period 1986 to 1997. There is little change in nitrate and ammonium deposition.

- ***Polloch, Strathvaich Dam (Northern and Western Highlands)***: These sites are relatively unpolluted and should be most sensitive to the limiting effect of any "background" pollutant levels in precipitation from the Atlantic. Deposition of non-seasalt sulphate has declined at both sites, more noticeably at Polloch. Nitrate concentrations and deposition have shown no change at the Strathvaich Dam site. As a result, the ratio of non-seasalt sulphate to nitrate concentrations and deposition have fallen.

The annual mean sulphur dioxide concentration has decreased substantially at all sites with the exception of the Strathvaich Dam site over the period 1986 to 1998. For example, the annual mean concentration at High Muffles has decreased from a maximum concentration of 5 to 7 μg S m^{-3} in 1988 to 1.7 μg S m^{-3} in 1997. 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 1998 were lower than those measured in the preceding years. This is consistent with the generally lower concentrations measured for a range of pollutants in 1998. It is likely that the meteorological conditions led to better dispersion and dilution of the emissions.

EMEP and WMO Intercomparisons

The measurements made in the UK Acid Deposition Monitoring Networks are reported to international bodies such as UN ECE European Modelling and Evaluation Programme (EMEP) and the World Meteorological Organisation (WMO). As part of a programme of quality control and assurance of the measurement data, AEA Technology participated in the laboratory intercomparison exercises organised by these bodies.

Ion concentrations were determined for the intercomparison samples provided by the WMO for the years 1997, 1998 and 1999. The results of the intercomparison have not yet been published. At this stage, the only meaningful results of the intercomparison are the ion balance values determined by AEA Technology for each of the samples. Of the 18 samples analysed, 15 samples had a mean absolute percentage difference in the ion balance which was less than 4%.

AEA Technology also participated in the 17th EMEP measurement intercomparison. Four samples were analysed. The measured ion concentrations were generally very close to the

expected concentrations. The most noticeable differences were for the concentrations of magnesium and calcium.

Changes to the Monitoring Programme

The measurement programme was reviewed in 1999 by leading members of the UK Acid Deposition community. Implementing the recommendations of this review, significant changes have been made to the network:

- expansion of the number of sites at which rainwater composition was determined with the new sites being located in ecologically-sensitive areas;
- a staged reduction in the number of sites at which rainwater composition was determined using wet-only collectors;
- the cessation of the measurements of nitric acid and the major constituents of particulate aerosol on a weekly basis at two sites;
- the phased cessation of the measurements of total inorganic nitrogen (TIN) and total inorganic ammonium (TIA);
- the establishment of a new network to monitor nitric acid in the gas phase and nitrate in the particulate aerosol on a monthly basis to replace the previous TIN, TIA and nitric acid measurement programme.

The measurements made in these new monitoring programmes will be reported in the next annual report.

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.

Contents

Appendices

1. Introduction

This is the first 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 1997 have been presented in previous reports [*e.g.* Campbell *et al.*, 1994, 1998; Vincent *et al.*, 1995, 1996, 1998].

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 the other “primary” 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 and total inorganic ammonium 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 1999 and significant changes were made to the network:

- expansion of the number of sites at which rainwater composition was determined with the new sites being located in ecologically-sensitive areas;
- a staged reduction in the number of sites at which rainwater composition was determined using wet-only collectors;
- the establishment of a new network to monitor nitric acid in the gas phase and nitrate in the particulate aerosol on a monthly basis;
- the cessation of the measurements of nitric acid and the major constituents of particulate aerosol on a weekly basis at two sites;
- the phased cessation of the measurements of total inorganic nitrogen (TIN) and total inorganic ammonium (TIA).

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 (NEGTAP) 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 1998. 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 1999;
- an overview of the results from the Acid Deposition Networks for 1998 and concentration maps for non-seasalt sulphate, nitrate, ammonium, hydrogen ion and nitrogen dioxide are presented in Section 3.
- trends in all acidifying components measured as part of the acid rain monitoring programme are presented in Section 4.

Summary tables of the weekly bulk precipitation composition data for 1998 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. Concentrations of ions determined for samples collected using the wet-only sampler are presented in Appendix 4.

2. Acid Deposition Monitoring in the UK

2.1 PRIMARY AND SECONDARY NETWORKS

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 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 1.

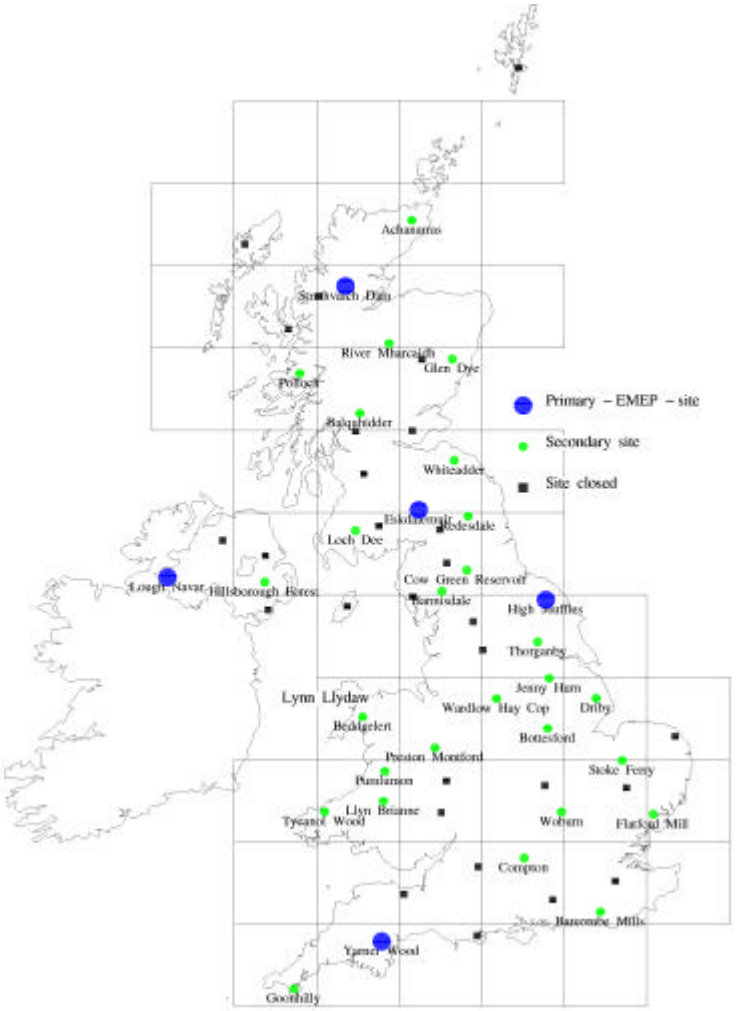

Figure 1 - Location of the Current Weekly and Primary Sampling Sites
(Also presented are the locations of the sites no longer operating. The 100 km squares show how the sampling site coverage meets the original coverage objective.)

In addition to the sampling of rainwater at both the Primary and Secondary Network sites, a range of other parameters are measured which allow the nature of precipitation chemistry in the United Kingdom to be understood. 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 the other "primary" 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 and total inorganic ammonium 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 sampling techniques used to make these measurements are summarised in the next section.

Further monitoring of sulphur dioxide - *The Rural SO_2 Monitoring Network* - is undertaken as part of the Acid Deposition Processes contract let to Centre for Ecology and Hydrology, Bush.

2.2 SAMPLING TECHNIQUES

2.2.1 Precipitation

Weekly precipitation samples were collected in bulk collectors designed by WSL [Hall, 1986] at 32 sites). 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 which 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 Nitrogen Dioxide

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

2.2.3 Sulphur Dioxide and Particulate Sulphate

The concentrations of particulate sulphate and sulphur dioxide were determined using eight-port bubbler instruments (AGL, Hitchin). Particulate sulphate was collected by drawing air through a Whatman 40 filter. After passage through the filter, the air is bubbled through a hydrogen peroxide solution where sulphur dioxide is absorbed and oxidised to sulphate, which is then determined.

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 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, this sampling programme will be replaced. The existing measurement programme was discontinued at High Muffles on the 31st March 1999. and will continue at Eskdalemuir until 30th September 2000 to allow a period of overlap with the replacement measurement programme (see Section 2.5.3).

2.2.5 Nitric Acid

A two-stage filter-pack system consisting of a PTFE membrane filter is used to remove particulate matter and a nylon membrane filter to collect nitric acid. Samples are collected on a weekly basis.

Following the strategic review of the networks, this sampling programme will be replaced. The existing measurement programme was discontinued at High Muffles and Stoke Ferry on the 31st March 1999.

2.3 SITE OPERATIONS

The sites in operation in 1998 are listed together with the local operators who perform the weekly change over of samples in Tables 1 and 2. Figure 1 shows the location of sampling sites.

2.4 ANALYTICAL PROCEDURES

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.

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.

Table 1a - Primary Network Sites and Measurements Made

Measurement:	**Precipitation**			**NO_2**	**SO_2**	**Part. SO_4**	**TIN /TIA**	**HNO_3 /NO_3**
***Frequency*: SITE:**	*weekly bulk*	*daily wet*	*daily bulk*	*monthly*	*daily*	*daily*	*daily*	*weekly*
Yarner Wood	*	*		*	*	*		
Lough Navar	*	*		*	*	*		
High Muffles	*	*		*	*	*	*	*♠
Eskdalemuir	*	*	*	*	*	*	*	
Strathvaich Dam	*	*		*	*	*		

Table 1b - Secondary Network Sites and Measurements Made

Measurement:	**Precipitation**			**NO_2**	**SO_2**	**Part. SO_4**	**TIN /TIA**	**HNO_3 /NO_3**
***Frequency*: SITE:**	*weekly bulk*	*daily wet*	*daily bulk*	*monthly*	*daily*	*daily*	*daily*	*weekly*
Barcombe Mills	*			*	*	*		
Stoke Ferry	*			*	*	*		*♠
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	*			*				
River Mharcaidh	*			*				
Achanarras	*			*				

♠ PTFE filters also analysed for the following ions: Na^+, Cl^-, NH_4^+, SO_4^{2-} and NO_3^-.

Table 2 - Precipitation Composition Monitoring Sites, 1998
(those in *bold* are EMEP sites with daily wet-only sampling as well as weekly bulk).

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
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	Institute of Hydrology
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
5153	Llyn Llydaw	SH 556518	358	Countryside Council for Wales
5120	Wardlow Hay Cop	SK 177739	350	English Nature
5136	Driby	TF 386744	47	Anglian Water
5118	Jenny Hurn	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	Institute of Freshwater Ecology
5149	Hillsborough Forest	J 243577	120	Dept. of Agriculture (NI)
5006	**Lough Navar**	**H 065545**	**130**	**Forestry Service, Northern Ireland**
5113	Cow Green Reservoir	NY 817298	510	English Nature
5107	Loch Dee	NX 468779	230	Scottish Environment Protection Agency
5109	Redesdale	NY 833954	240	ADAS
5002	**Eskdalemuir**	**NT 235030**	**259**	**Meteorological Office**
5106	Whiteadder	NT 664633	250	East of Scotland Water
5152	Balquhidder 2	NN 545207	135	Mountain Environments
5151	Polloch	NM 792689	30	Forest Enterprise
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

♠ The Beddgelert site was closed down July 1996 and replaced by Llyn Llydaw, O.S. co-ordindates SH 638549. The site is situated within the Environmental Change Networks' compound in the Snowdon Horseshoe

$$I = \frac{2(\Sigma c - \Sigma a)}{\Sigma c + \Sigma a} \qquad \text{(Equation 1)}$$

where Sc = sum of cation concentrations in equivalents (μeq l^{-1}) and Sa = sum of anion concentrations in equivalents (μeq 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 3 are submitted for reanalysis. The reanalysis is usually completed within four months of sampling.

Table 3 - Ion Balance Criteria Used to Select Samples for Reanalysis

Ionic strength concentration range (μeq 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 samples failed the criteria and were selected for reanalysis. This failure rate was reduced on reanalysis.

2.5 CHANGES TO THE NETWORKS

2.5.1 New Bulk Rainwater Sites

Following the recommendation in the Fourth Report of the Review Group on Acid Rain *to install a small number of sites in ecologically sensitive areas not adequately represented at present,* seven new sites were established in the early part of 1999 to monitor the composition of rainwater on a fortnightly basis. The locations of the sites are

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

as shown in Figure 2.

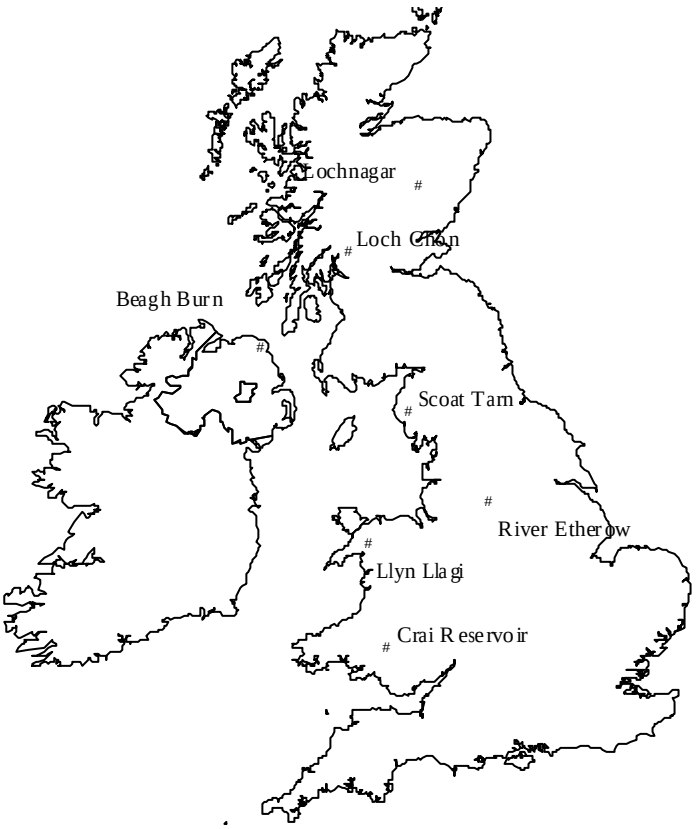

Figure 2 - The New Bulk Rainwater Sites

Rainwater samples are collected using bulk collectors. The collection of samples from the new sites and their subsequent analyses have been successfully integrated into the overall measurement programme.

2.5.2 Changes to the Existing Monitoring Programme

A strategic review of the measurement programme involving key stakeholders in the Acid Deposition community was held in February 1999 at the Department. Out of this review, a number of changes were recommended to the current network measurement programme:

- *the existing TIN/TIA measurements at 2 sites should be replaced by a new nitric acid monitoring network at 12 sites*

  The TIN/TIA measurement programme at High Muffles ended on 31st March 1999. The measurement programme at Eskdalemuir will continue until 30th September 2000 to provide a period of overlap with the measurements from the new nitric acid monitoring network.

- *the number of daily rainwater precipitation sites should be reduced*

  The daily wet-only collector measurement programme at Yarner Wood and Lough Navar primary sites was terminated on 31 March 1999. The measurement programme at the Strathvaich Dam and High Muffles sites was continued until 31 December 1999. From that date, daily wet-only collector measurements will only be undertaken at the Eskdalemuir site.

2.5.3 The Nitric Acid Monitoring Network

A new monitoring network for oxidised nitrogen species has been established at 12 sites. The network is operated and managed by ITE Bush with the analysis undertaken by Harwell Scientifics Ltd. (formerly part of AEA Technology plc.).

The sampling system for the monitoring network consists of acid gas collection on potassium carbonate denuders, followed by collection of ammonia on citric acid coated denuders (the latter as part of the NH_3 network). This sampling train is followed by the filter pack for aerosol species (as currently being established for ammonium aerosol).

The sites in the new nitric acid network are shown in Figure 3. The sites were selected because:

- they provide a broad spatial coverage across the UK
- they are situated in both high and low concentration areas
- they are co-located with other relevant measurement programmes (Acid Deposition Monitoring Network sites, NERC Environmental Change Network sites, NH_3, SO_2 and NO_x sites)
- they are co-located with existing sampling using the ITE DELTA system for NH_3 and NH_4^+)
- there is a safe outdoor area for mounting the DELTA system.

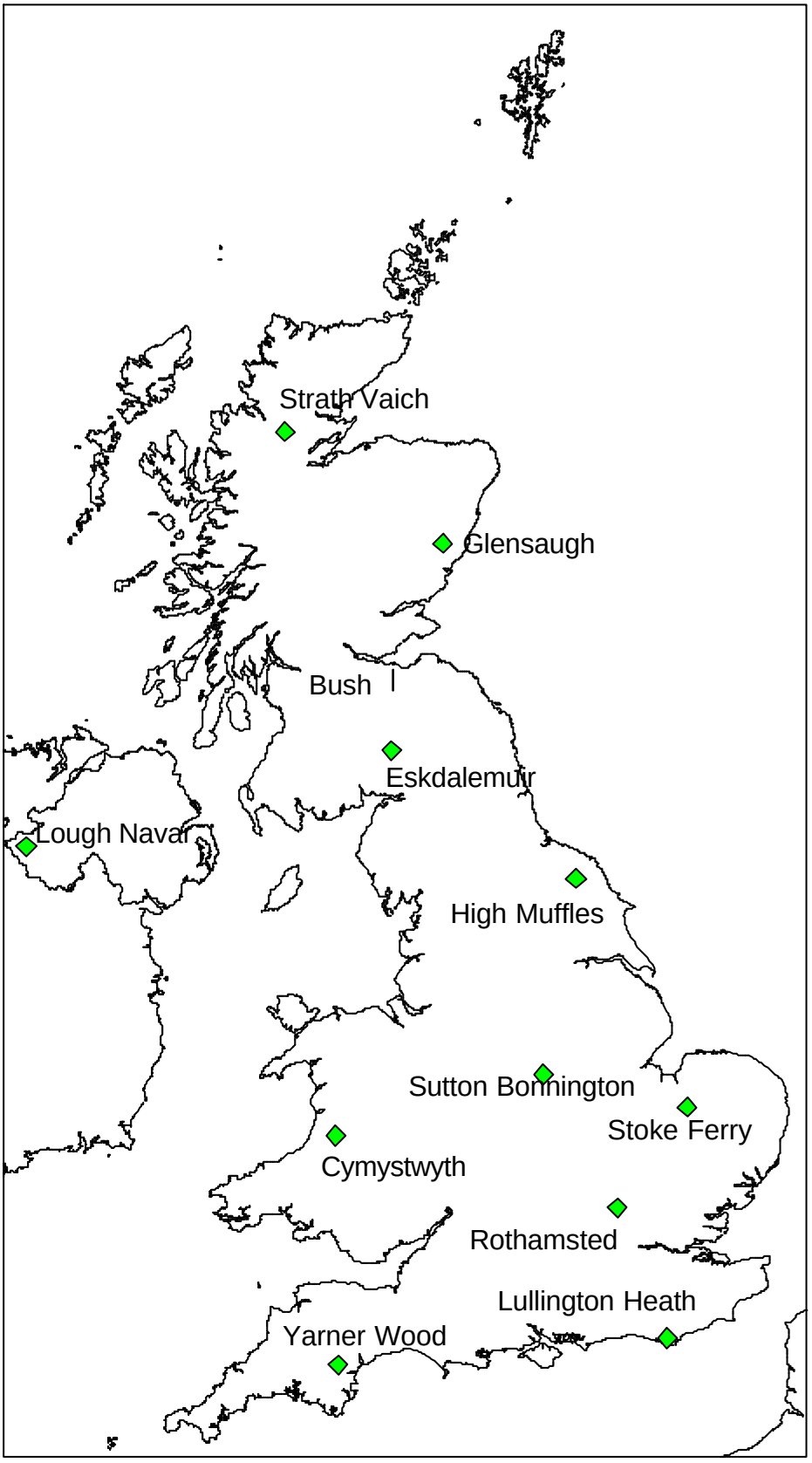

Figure 3 - Map showing the 12 monitoring sites in the new Nitric Acid Monitoring Network for HNO_3, NO_3^- and related acid gas/particle measurements.

Although the need for daily nitric acid and particulate nitrate measurements at a minimum of two sites was identified at the review meeting held in DETR, the decision was taken to establish one daily nitric acid site in the first instance. The initial intention was for this site to be located at Lullington Heath in Sussex.

An initial review of the sites to establish the daily nitric acid system has concluded that, with the current design of the system and the need for frequent site visits, the Lullington Heath site was less desirable given the access conditions to this site. The Barcombe Mills site, which is nearby, has been identified as an alternative. Planning permission is currently being sought to establish the instrument.

3. Results for 1998

3.1 DATA SUMMARY

The complete set of precipitation measurements made in the Acid Deposition Monitoring Networks during 1998 is provided in Appendix 1. For each site, plots are included which show the trend in the rainfall and the annual precipitation-weighted mean concentrations for non-seasalt sulphate, nitrate, ammonium and hydrogen ion since 1986. The mean annual rainfall and the precipitation-weighted mean annual concentrations of all ions for the period from 1986 to 1998 are tabulated in Appendix 2. These Appendices contain a significant amount of information.

Appendix 1 also includes graphs showing the seasonal variation in the concentrations. The plots clearly show 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 4). 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 spring than in the rest of the year and the inverse correlation between rainfall amount and the concentrations of non-seasalt sulphate, nitrate, ammonium results in a corresponding opposite seasonal variation.

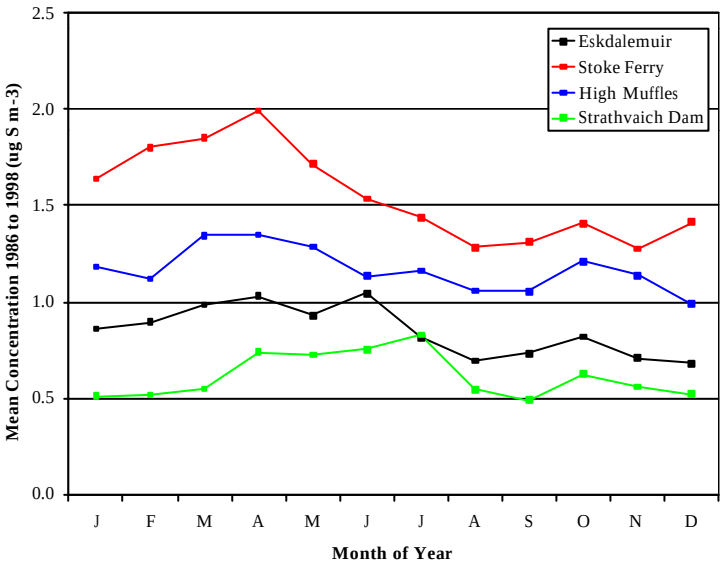

Figure 4: Seasonal Variation in the Particulate Sulphate Concentration at 4 Primary Sites

Appendix 1 also summarises the trends in concentration and deposition of non-seasalt sulphate, nitrate and ammonium at each site. The shape of the trend varies from site to site, although in general annual precipitation-weighted mean non-seasalt sulphate has tended to decline whereas nitrate and ammonium have not changed much at all.

3.2 HIGHLIGHTS

The rainfall was higher in 1998 than the period mean (1986-1998) by between 5% (Barcombe Mills) to 47% (Tycanol Wood - *this is incorrect as the rainfall amount included an invalid measurement*) apart from the sites at Thorganby and Balquhidder which had lower rainfall. The Welsh sites were wetter and more rain fell at the elevated sites. The sites in Eastern England showed the smallest increases and had the same amount of rain as in 1997.

A consequence of the higher rainfall measured in 1998 is that the concentration of the species in rainwater were lower than in preceding years. However, the deposition, the product of the concentration and rainfall, was higher for some species.

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

Llyn Brianne (Mid Wales)
The rainfall was 22% higher in 1998 than the period mean, resulting in lower rainwater concentrations. The wet deposition of non seasalt sulphate, nitrate, hydrogen and ammonium was higher in 1998 than that observed in 1997. The long term trends show a decline in the amount of wet deposition for sulphate and hydrogen but a very slight increase in the deposition of the nitrogen species.

Bannisdale (Lake District)
After the three drier years of 1995, 1996 and 1997, the rainfall in 1998 was comparable to that measured in 1994 and 11% above the period mean. The precipitation-weighted concentrations were all lower in 1998 than in the preceding years. Although the wet deposition of sulphate and hydrogen was slightly higher in 1998, the long term trends continue to be downward. The trends in the nitrogen species show no real change.

Cow Green Reservoir (N Pennines)
As for the other sites, the rainfall was higher in 1998 which resulted in higher amounts of wet deposition of the species. Although closer to the major power station sulphur dioxide sources, the annual precipitation-weighted mean concentrations of non-seasalt sulphate were slightly smaller than at Bannisdale and have also shown a steadier decline over the period 1986 to 1998. Annual deposition of sulphate was more variable but has also declined. Nitrate deposition showed little change while ammonium concentrations and deposition have increased.

Eskdalemuir (S Scotland)
The measurements made in 1998 confirm the previous trends. Annual precipitation-weighted non-seasalt sulphate concentration is less variable than at most other sites and shows a steady decline, as does annual deposition. There was little change in nitrate and ammonium.

Balquhidder (SW Highlands)
Unlike other sites in the network, the rainfall observed in 1998 was comparable to that measured in 1997 and the period mean. The 1998 measurements continue the steady decline in the annual wet deposition of non-seasalt sulphate reported over the period 1986 to 1997. The site was moved in 1996 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. The year was

characterised by a lack of winter rain which is usually relatively unpolluted when associated with Atlantic storms.

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 vary from 10 μeql^{-1} to 15 μeql^{-1} and show no significant change over the full measurement periods, although the more recent measurements at Polloch indicate a downward trend. 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.

3.3 CONCENTRATION MAPS FOR 1998

3.3.1 Rainwater composition

The spatial concentration patterns for hydrogen ion, non-sea sulphate, nitrate and ammonium are presented in Figures 5a through to 5d.

The parameters used in the interpolation are presented in Appendix 3.

In previous years, in addition to concentration maps, deposition maps have been determined using rainfall fields supplied by the Meteorological Office. As these data are not yet available, only concentration maps are presented.

3.3.2 Nitrogen Dioxide

Figure 6 shows the spatial concentrations of rural nitrogen dioxide concentrations in the UK for 1998. Concentrations are highest in the Midlands and southern England. In the main, this reflects the proximity of roads and other aspects of urbanisation to the sampling sites.

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

3.4 SULPHUR DIOXIDE AND PARTICULATE SULPHATE

The measurements of sulphur dioxide and of particulate sulphate made at the eight primary sites are summarised in Appendices 4.1 and 4.2 respectively.

The measurement of sulphur dioxide concentrations is also made in the Rural SO_2 Monitoring Network which is covered by a separate DETR contract (under sub-contract from the NERC). The mapping of the sulphur dioxide concentration is undertaken under that contract and is not discussed in this report. Reports have been prepared by Vincent and Campbell (1996) and Hasler and Downing (1998).

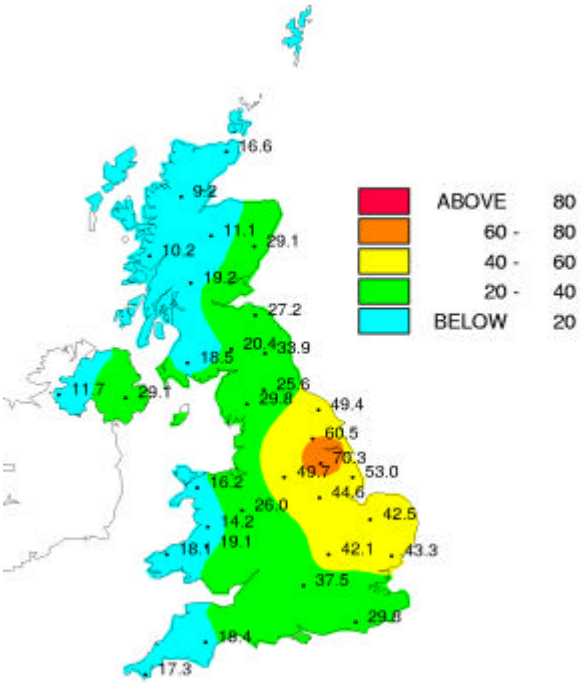

Figure 5a - Non seasalt sulphate (SO_4^{2-}), 1998 (µeq l^{-1})

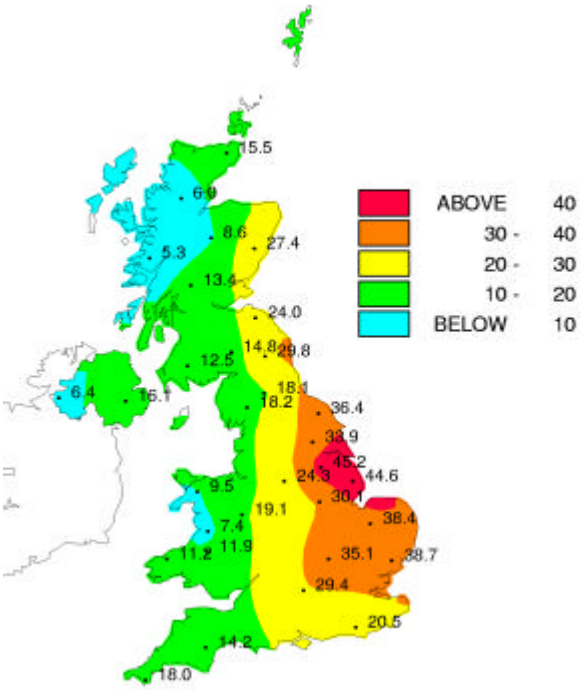

Figure 5b - Nitrate (NO_3^-), 1998 (µeq l^{-1})

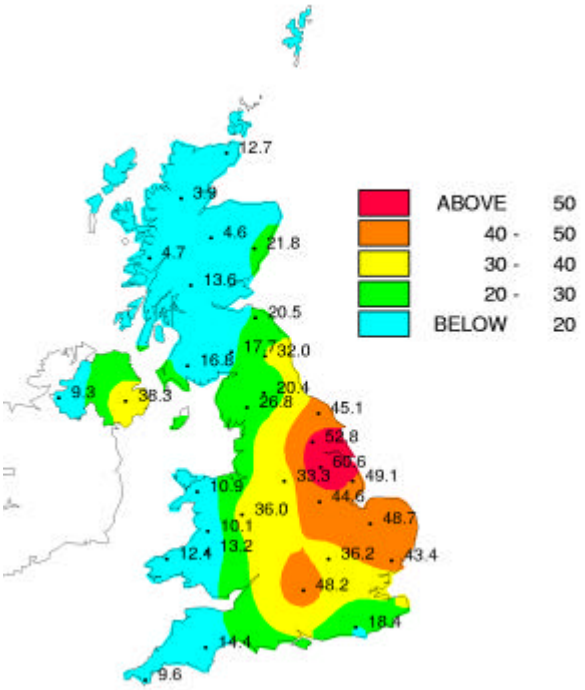

Figure 5c - ammonium (NH_4^+), 1998 (µeq l^{-1})

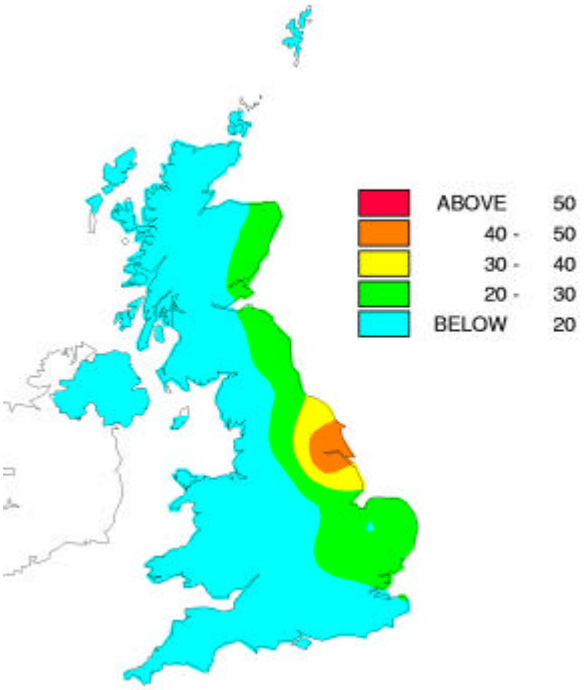

Figure 5d - hydrogen (H^+), 1998 (µeq l^{-1})

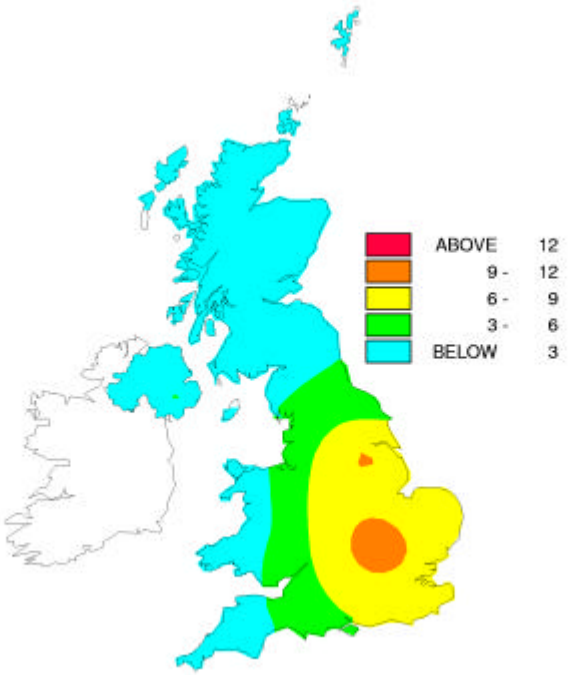

Figure 6: Interpolated nitrogen dioxide concentrations in 1998 (ppb)

4. Trends in Acidifying Components

4.1 RAINWATER CHEMISTRY TRENDS

Figures 7 and 8 show the monthly total and running annual average[1] of the monthly total deposition for non-seasalt sulphate and nitrate at each of the primary sites in the network. These plots show that there is a large month to month variation in deposition at all sites, the variation in average deposition between sites and the long-term trend in deposition over the period 1986 to 1998.

The spatial variation in 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 0.04 to 0.05 g S m^{-2} $month^{-1}$ and nitrate around 0.03 g N m^{-2} $month^{-1}$. There was greater wet deposition of sulphate at the High Muffles site (0.05 to 0.07 g S m^{-2} $month^{-1}$) 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 to 0.02 to 0.03 g S m^{-2} $month^{-1}$ and around 0.01 to 0.02 g N m^{-2} $month^{-1}$.

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 but the average deposition has increased over the period at some of the sites and decreased at others.

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.

Although the primary focus of the monitoring programme is in 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). Figure 9 shows how the concentrations of sulphate and nitrate concentrations and the other component parts of rainwater have changed at the Jenny Hurn and Llyn Brianne sites since the monitoring programme began.

[1] 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.

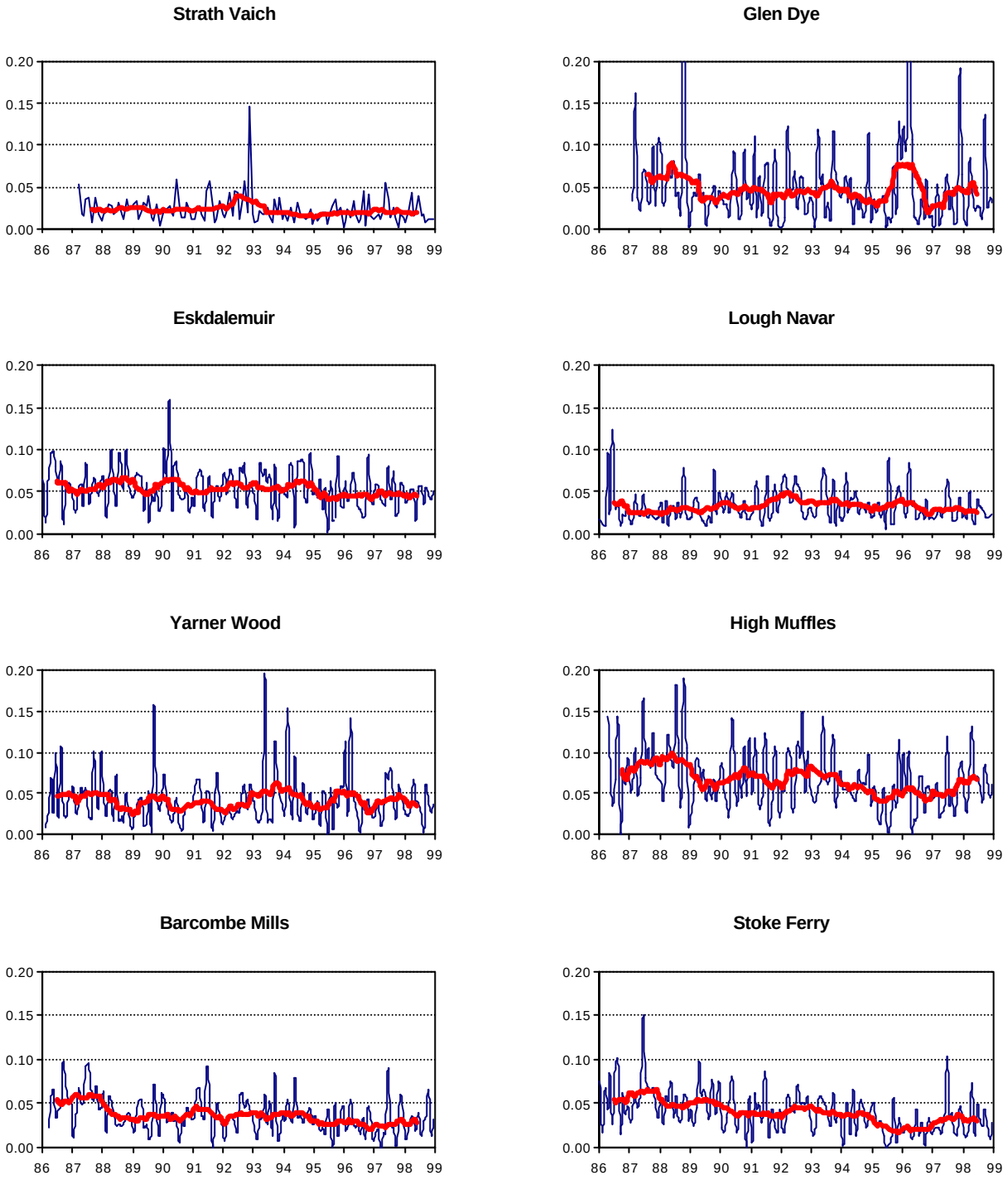

Figure 7: Wet deposited non-seasalt sulphate monthly mean and running annual mean (g S m^{-2} $month^{-1}$)

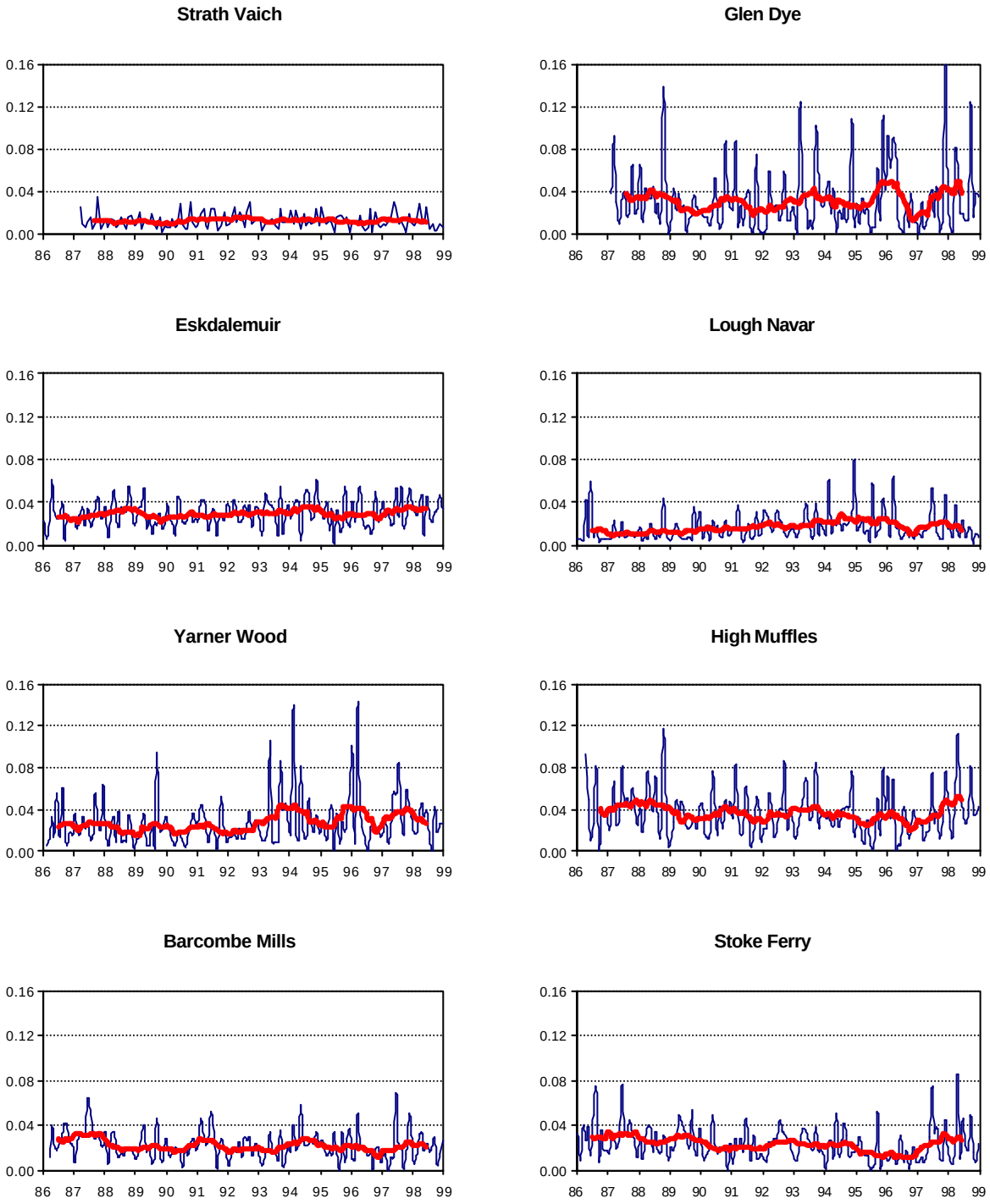

Figure 8: Wet deposited nitrate monthly mean and running annual mean ($g\ N\ m^{-2}\ month^{-1}$)

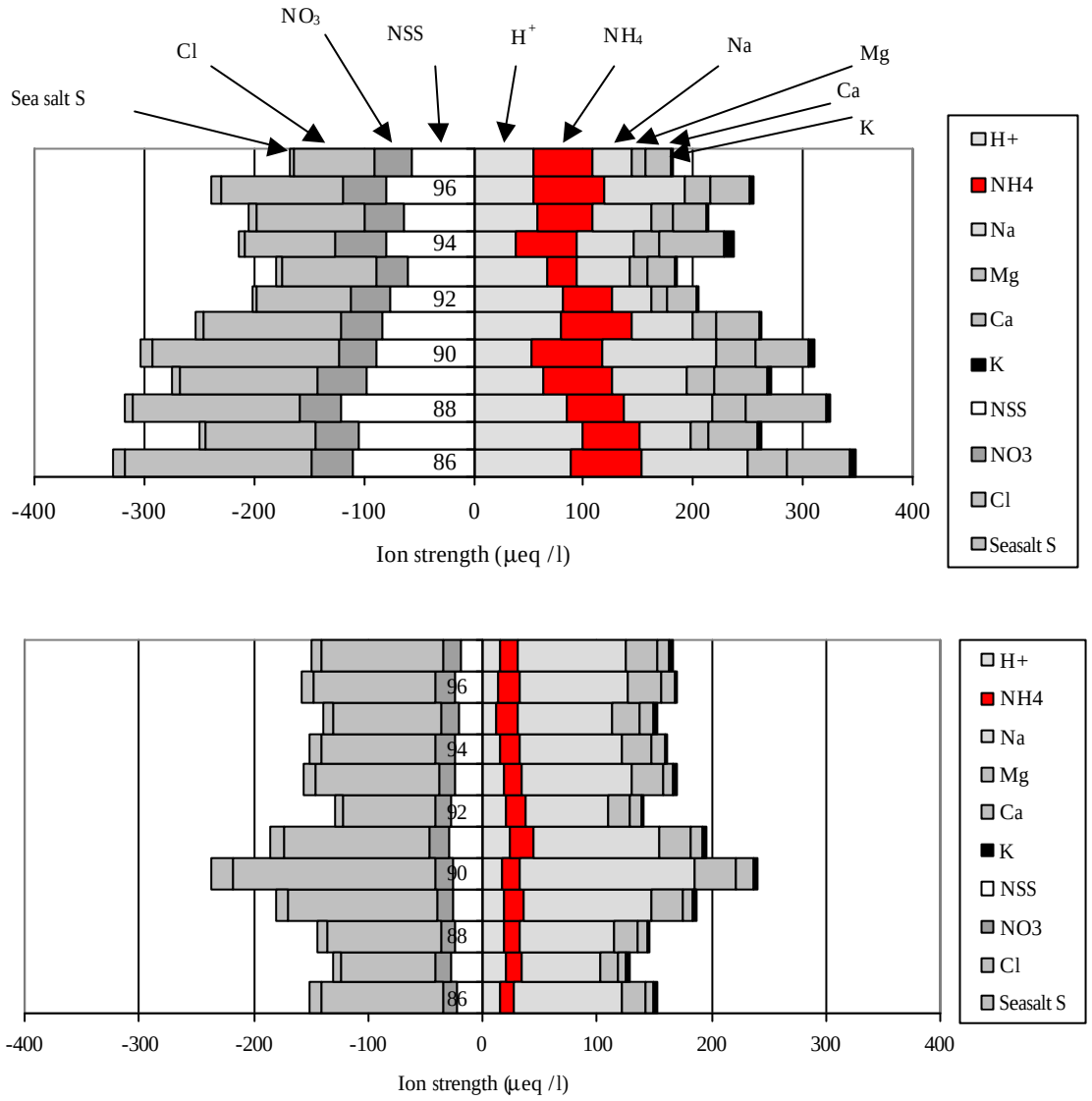

Figure 9: Trends in the Concentration of Ions Measured in Rainwater observed at Jenny Hurn (upper trace) and Llyn Brianne (lower trace) since 1986

4.2 SULPHUR DIOXIDE AND PARTICULATE SULPHATE

4.2.1 Sulphur Dioxide

The monthly and running annual mean concentrations of sulphur dioxide measured at each of the primary sites are presented in Figure 10. The strong seasonal variation is particularly noticeable at the High Muffles site, close to major sulphur dioxide sources. The annual mean sulphur dioxide concentration has decreased substantially at all sites with the exception of Strathvaich Dam over the period 1986 to 1998. For example, the annual mean at High Muffles has decreased from a maximum concentration of 5 to 7 µg S m^{-3} in 1988 to 1.7 µg S m^{-3} in 1997.

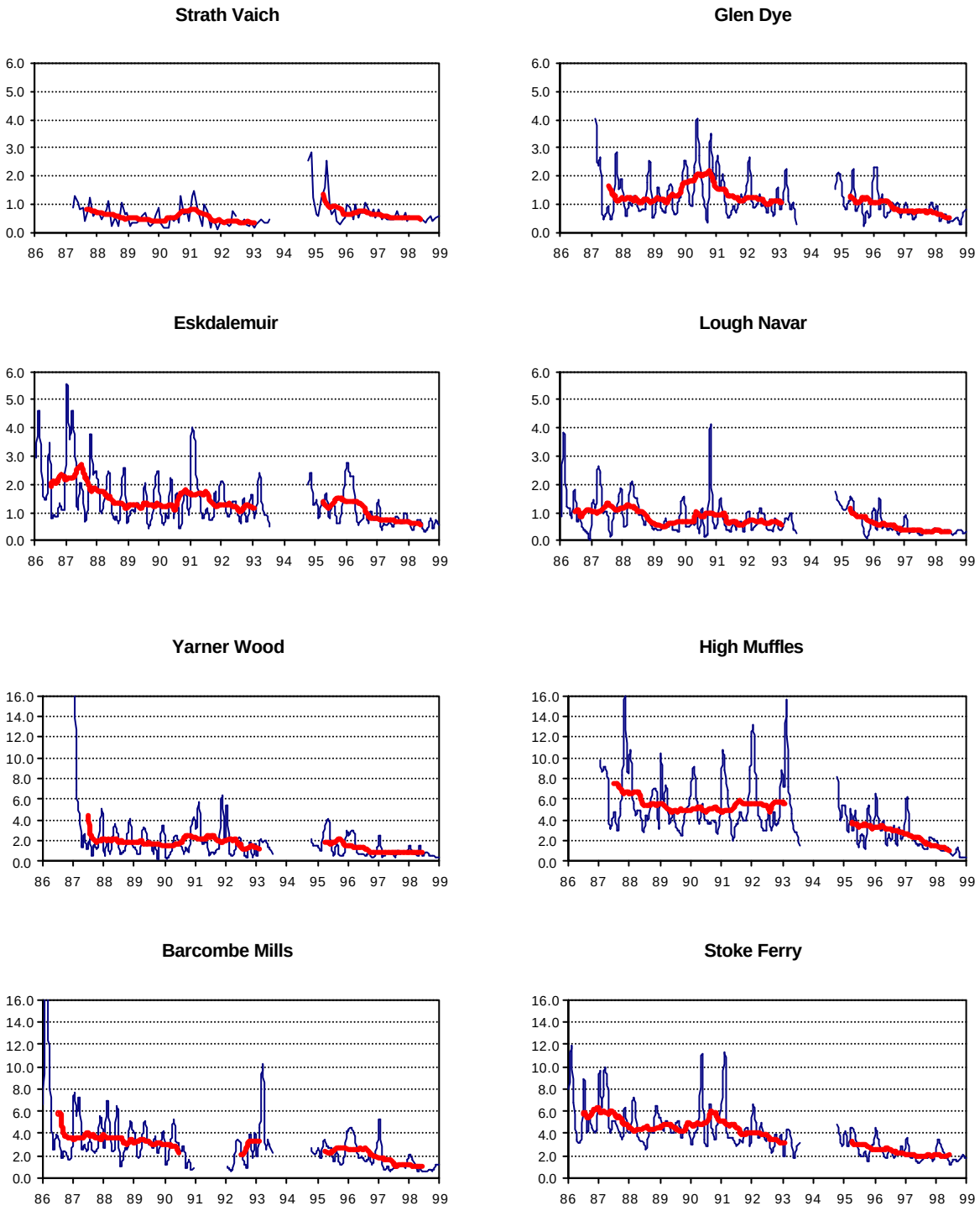

Figure 10: Monthly and Running Annual Mean Concentrations of Sulphur Dioxide at the Daily Sites, 1986 to 1998 (µg S m^{-3}).

Figure 11 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 1998, the concentration has decreased by a similar factor of two to three, to less than 0.5 ppb. The figure also shows the large month-to-month variation and clearly illustrates how concentrations are increased during cold winter months with relatively high emissions and poor vertical dispersion of pollutants.

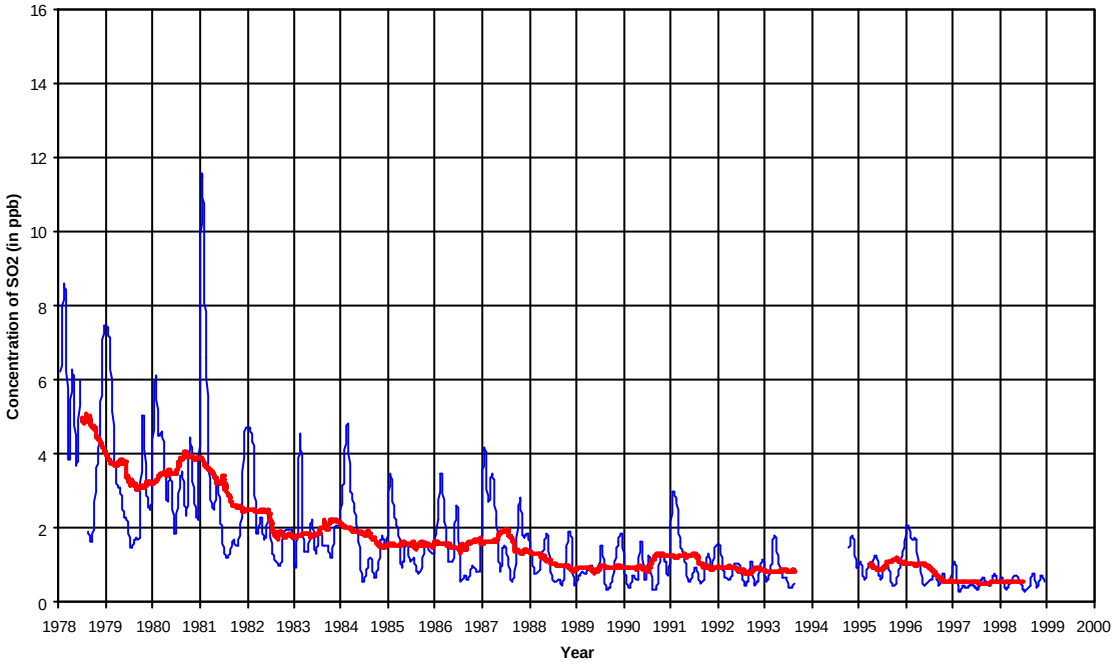

Figure 11: Trends in the concentration of sulphur dioxide observed at Eskdalemuir since 1978

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

4.2.2 Particulate Sulphate

Sulphate concentrations do not obviously exhibit the same degree of decrease as that observed for sulphur dioxide, as shown in Figure 12. 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 13 provides the corresponding 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 trend line and there is an apparent increase in concentration from 1978 to 1984 followed by a decrease to 1998. Over the period from 1978 to 1998 the average concentration declined from around 1 µg S m^{-3} to about 0.6 µg S m^{-3}. The high monthly mean concentration in March 1996,

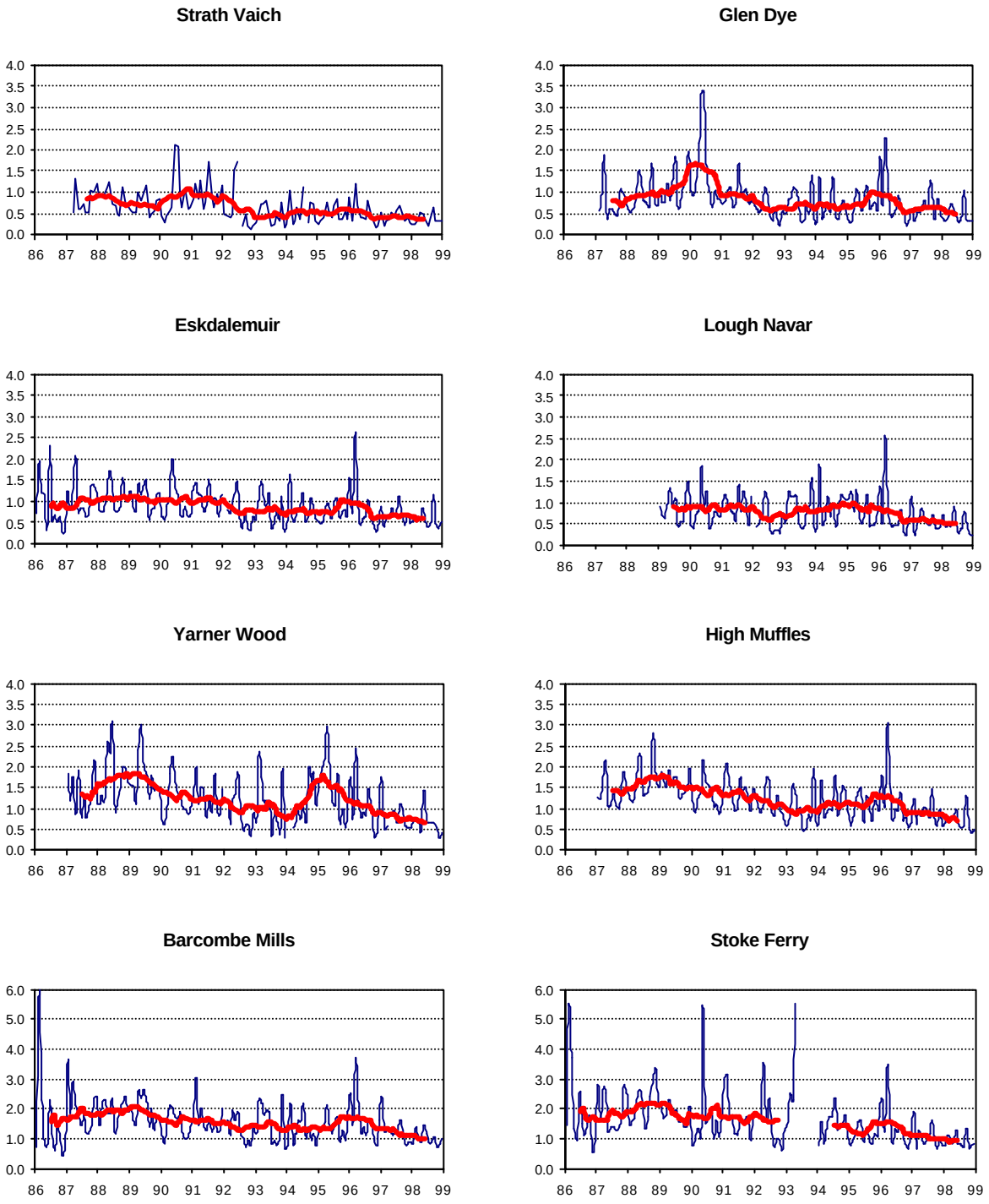

Figure 12: Monthly and Running Annual Mean Concentrations of Particulate Sulphate at the Daily Sites, 1986 to 1998 (μg S m^{-3}).

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.

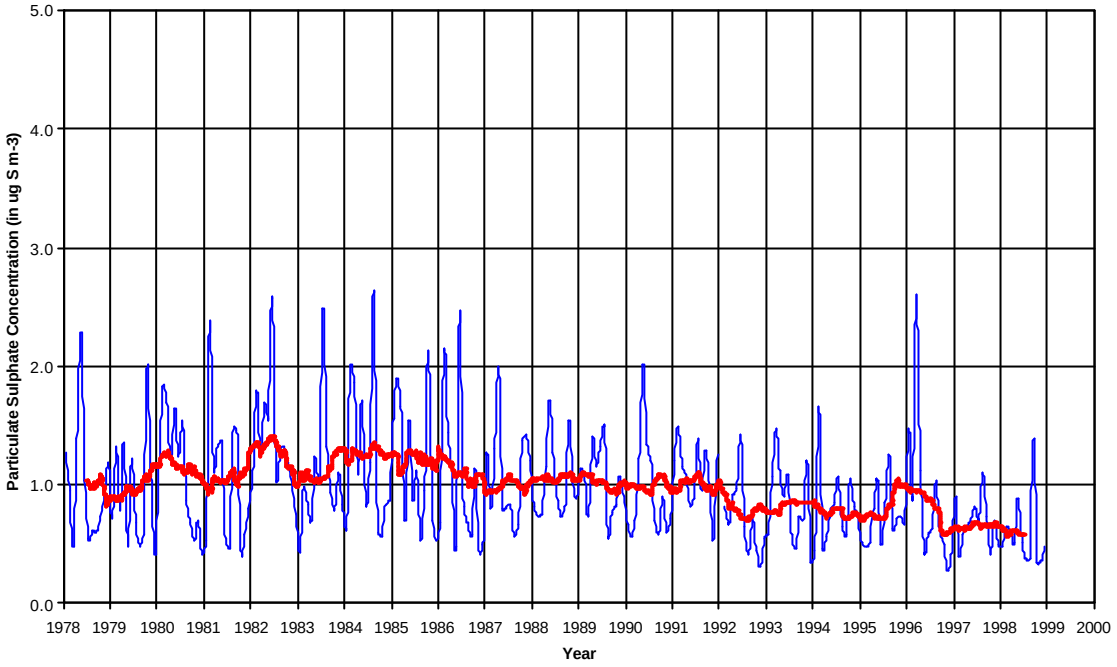

Figure 13: Trends in the particulate sulphate concentration observed at Eskdalemuir since 1978

4.3 NITROGEN DIOXIDE

Annual average concentrations for nitrogen dioxide at the Primary sites are presented in Figure 14.

The annual mean concentrations in 1998 were lower than those measured in the preceding years. This is consistent with the generally lower concentrations measured for a range of pollutants in 1998. It is likely that the meteorological conditions led to better dispersion and dilution of emissions. Further analysis is being undertaken elsewhere to confirm this interpretation.

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 at low concentrations of the passive sampler method, the fall in nitrogen dioxide concentrations could only be observed at the relatively high concentration sites and is indeed observed at 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.

4.4 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

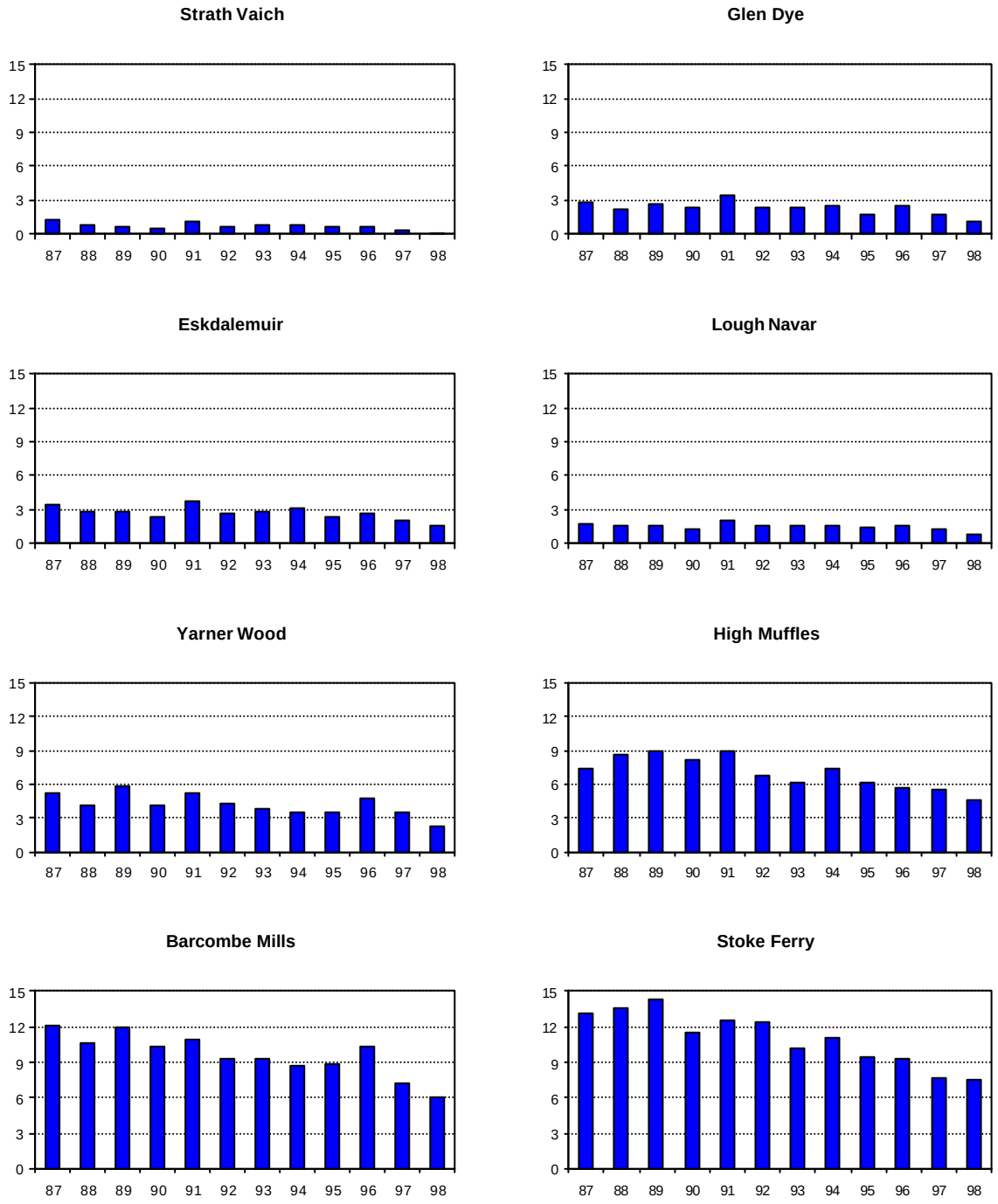

Figure 14: Annual average nitrogen dioxide concentration (ppb).

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.

The dual filter technique used in the UK Acid Deposition Network for nitric acid is indicative only. It consists of a PTFE filter followed by a nylon membrane filter. Air is drawn through 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. Samples may under collect in dry summer conditions 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 Figures 15a and 15b. During summer weeks the weekly mean concentration at both sites occasionally reached 1 to 2 μg N m^{-3}. This typically occurred under conditions of elevated ozone concentrations [Campbell, 1990]. 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.

The running annual mean concentrations measured at High Muffles are around 0.2 μg N m^{-3} and have tended to decrease over the period. At Stoke Ferry, the running annual mean varied from 0.2 μg N m^{-3} to 0.3 μg N m^{-3} over the period and has also tended to decrease.

4.5 TOTAL INORGANIC NITRATE AND AMMONIUM

Measurements of 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, are made on a daily basis at Eskdalemuir and High Muffles. This measurement programme is now being replaced by separate measurements of the gaseous and particulate phases.

The monthly mean concentrations of TIN and TIA measured at Eskdalemuir and High Muffles are presented in Figures 16a (TIN) and 16b (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, similar to the ratio of nitrogen dioxide concentrations. This is consistent with the general trends in pollutant concentrations across the UK. There is clearly no 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.

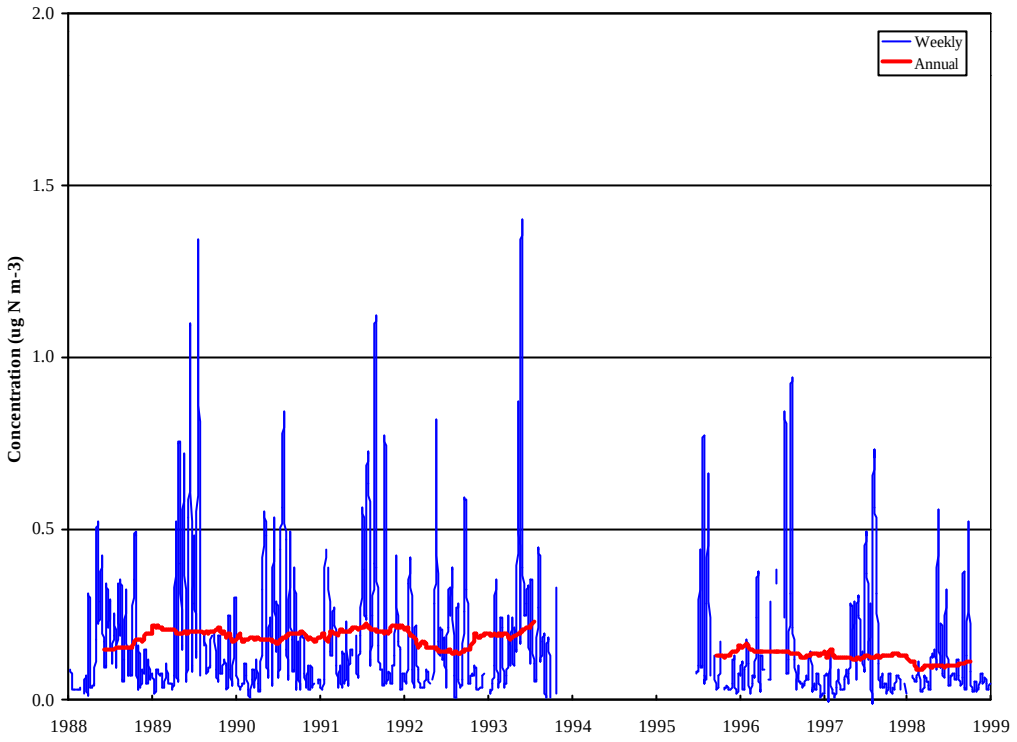

Figure 15a: Weekly and Running Average Concentration of Nitric Acid at High Muffles (µg N m^{-3})

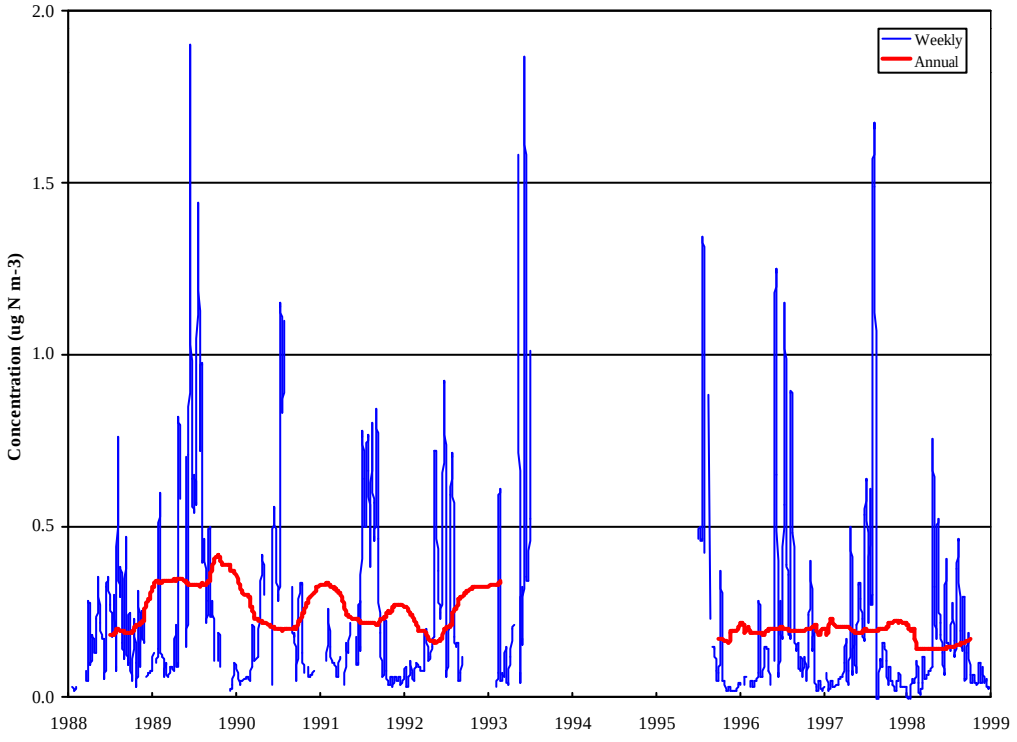

Figure 15b: Weekly and Running Average Concentration of Nitric Acid at Stoke Ferry (µg N m^{-3})

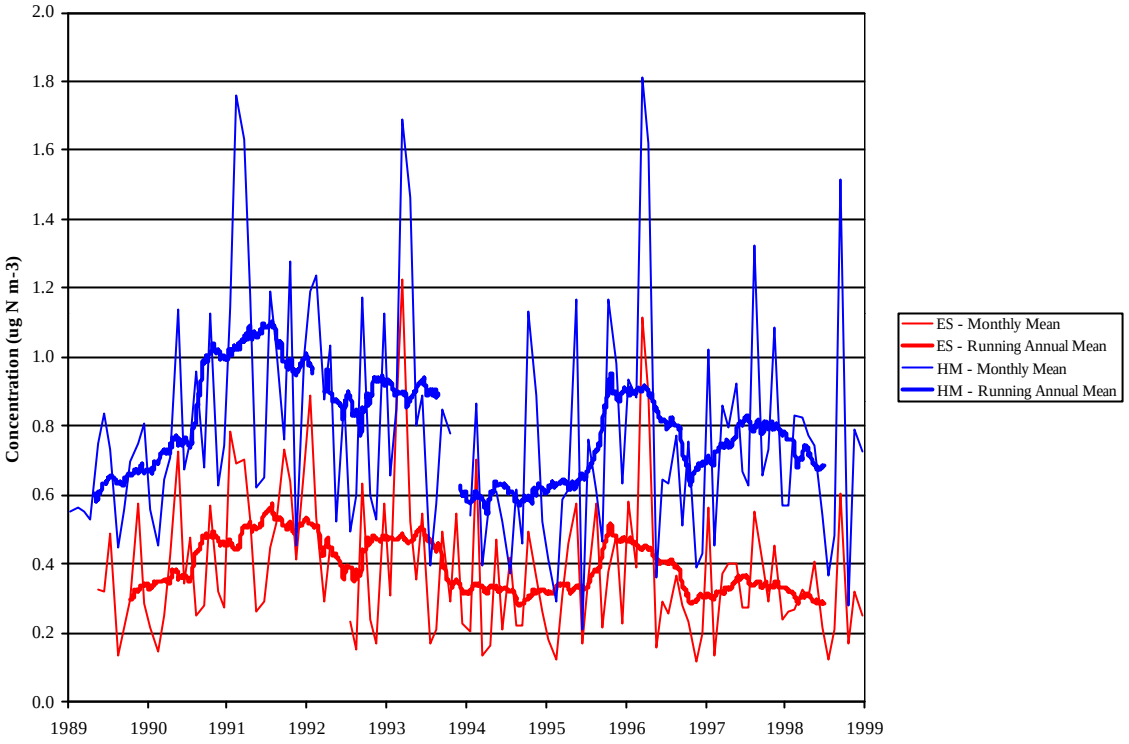

Figure 16a: Monthly Mean and Annual Running Mean Concentrations of Total Inorganic Nitrate (µg N m^{-3})

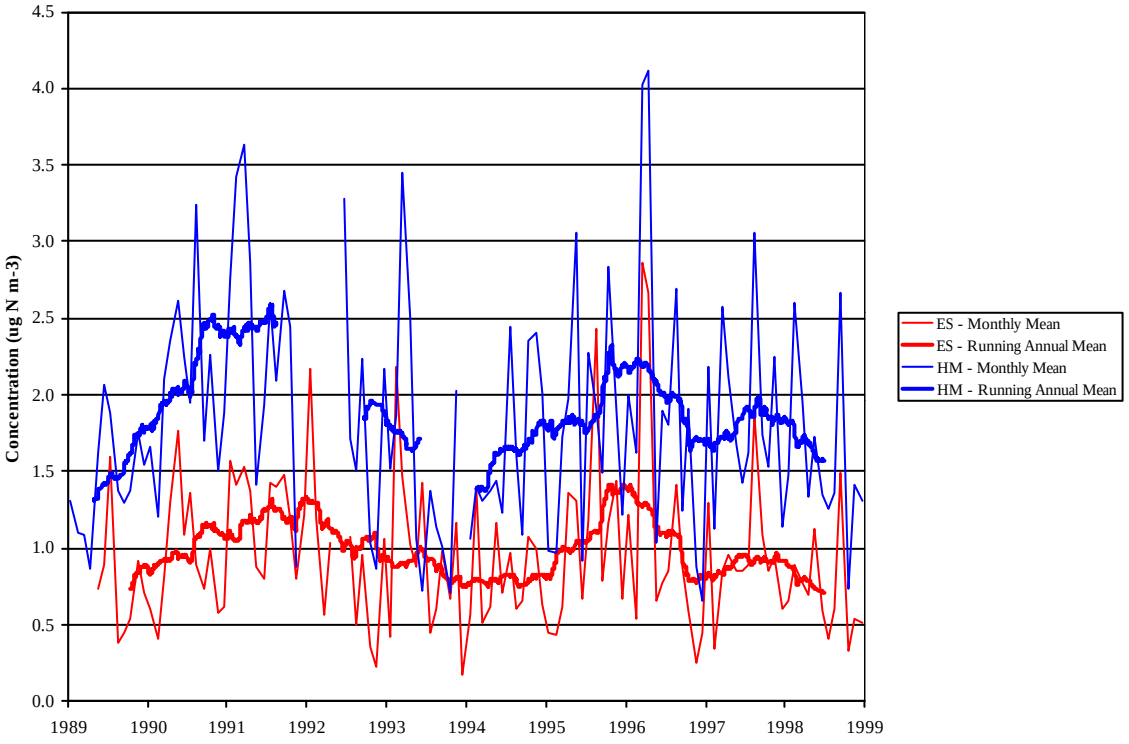

Figure 16b: Monthly Mean and Annual Running Mean Concentrations of Total Inorganic Ammonium (µg N m^{-3})

5. Other Activities

5.1 EMEP AND WMO INTERCOMPARISONS

A number of the measurements made in the UK Acid Deposition Monitoring Networks are reported to international bodies such as UN ECE European Modelling and Evaluation Programme (EMEP) and the World Meteorological Organisation (WMO). As part of a programme of quality control and assurance of the measurement data, these bodies have organised laboratory intercomparison exercises in which samples are sent to the participating laboratories for analysis.

5.1.1 WMO Intercomparison

The intercomparison undertaken for the WMO Global Atmospheric Watch programme re-established the UK connection with WMO. The intercomparison was led by an analytical laboratory at the Atmospheric Sciences Research Center. Albany, USA.

Ion concentrations were determined for the intercomparison samples provided for the years 1997, 1998 and 1999. The results of the intercomparison have not yet been published in any official WMO/GAW document. At this stage, the only meaningful results of the intercomparison that can be presented are the ion balance values determined by AEA Technology for each of the samples. The individual ion concentrations and the ion balances are shown in Table 4.

Table 4: Summary of Measurements Made in WMO Intercomparison

Sample Reference	Concentration of Cations (in μeq l^{-1})						Concentration of Anions (in μeq l^{-1})				Total Cation Conc.	Total Anion Conc.	% Absolute Difference
	H^+	NH_4^+	Na^+	K^+	Mg^{2+}	Ca^{2+}	SO_4^{2-}	NO_3^-	Cl^-	PO_4^{3-}			
19971A	39	6	8	2	4	0	44	8	12	0	60	64	6
19971B	40	6	8	2	4	3	44	8	11	0	63	63	0
19971C	40	6	8	2	4	0	44	8	11	0	60	63	5
19972A	219	46	10	2	0	0	259	8	13	0	277	280	1
19972B	219	47	11	2	0	0	259	8	13	0	279	280	0
19972C	219	47	10	2	0	0	260	8	13	0	278	281	1
19973A	126	26	63	14	8	6	143	65	32	0	243	240	1
19973B	117	26	61	14	8	6	140	65	32	0	232	237	2
19973B	123	26	61	14	8	7	140	65	32	0	238	237	0
19981A	123	47	11	2	0	7	164	8	20	0	190	192	1
19981B	123	47	11	2	0	6	164	8	20	0	189	192	1
19981C	123	47	11	0	0	6	164	8	20	0	186	192	3
19982A	30	9	10	2	0	4	34	10	14	0	56	58	4
19982B	30	9	11	2	0	4	34	10	14	0	56	58	2
19982C	29	9	10	2	0	4	34	10	14	0	54	58	7
19983A	209	45	10	2	0	0	251	8	13	0	266	272	2
19983B	204	45	10	2	0	0	251	8	13	0	262	272	4
19983C	209	45	10	2	0	0	252	8	13	0	266	274	3

The mean percentage absolute difference is defined as

$$I = \frac{200\ (\Sigma c - \Sigma a)}{\Sigma c + \Sigma a}$$

Of the 18 samples analysed, 15 samples had a mean absolute percentage difference in the ion balance which was less than 4%. The difference was somewhat greater for the other three samples.

5.1.2 EMEP Intercomparison

AEA Technology participated in the 17th EMEP measurement intercomparison. Figure 17a to 17d present comparisons of the ion concentrations determined at AEA Technology and those expected.

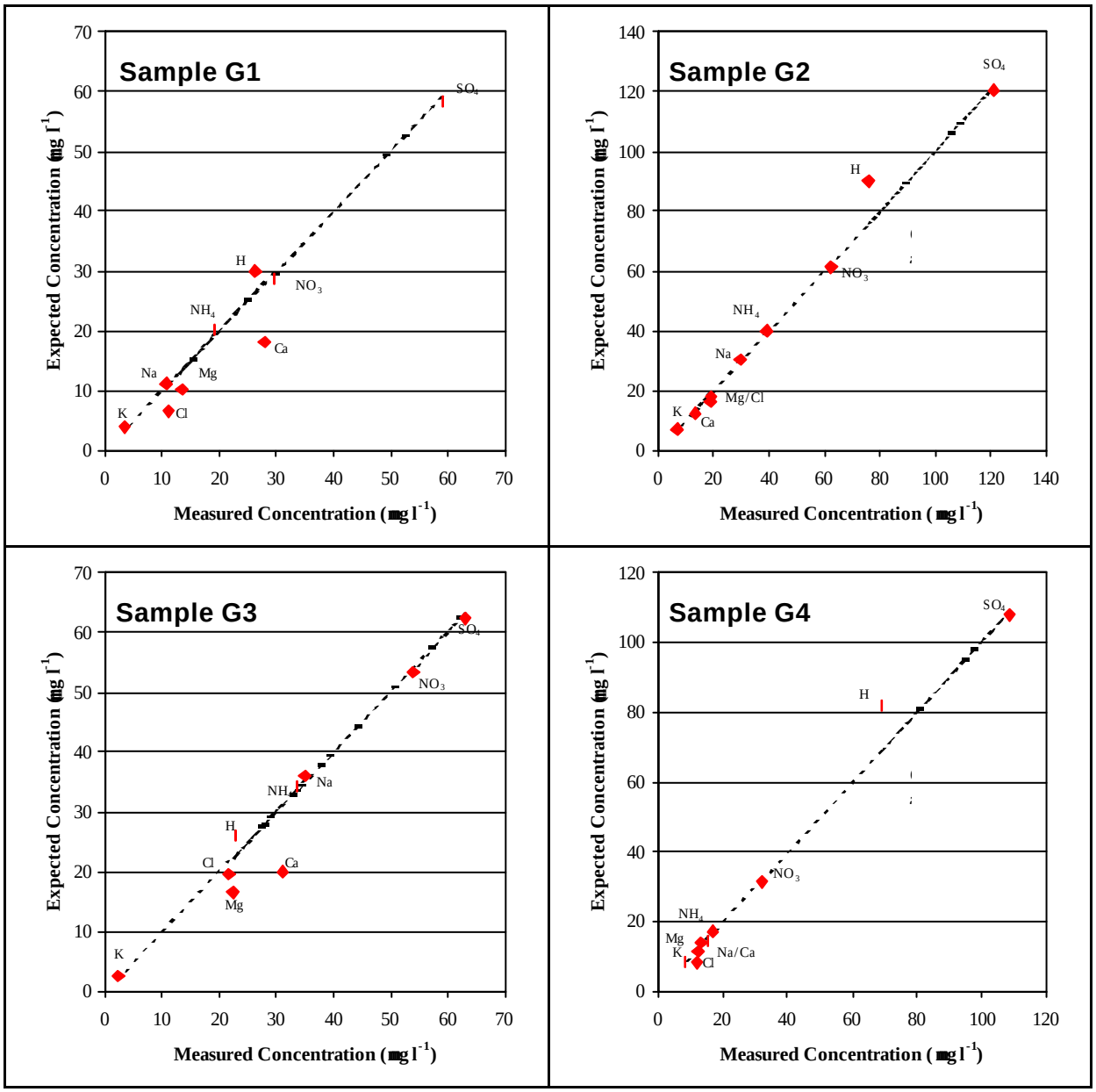

Figure 17: Expected and Measured Ion Concentrations for the EMEP Intercomparison

5.2 NUMERICAL MODELLING

The TRACK model - Trajectory Model with Atmospheric Chemical Kinetics - has been used to investigate possible explanations for

- the non-linearity between wet and dry deposition of sulphur
- the increase in nitrate concentrations at locations outside the source region.

5.2.1 Non-Linearity in Sulphur Deposition

Downing *et al.* [1995] and, subsequently, the Review Group on Acid Rain [RGAR, 1997] showed that dry deposition is decreasing faster than wet deposition, as shown in Figures 18a and 18b. Further, the decrease in dry deposition is faster than the decrease in UK total sulphur dioxide emissions. This is still a current issue and forms a topic recently discussed by the Department's expert group, NEGTAP.

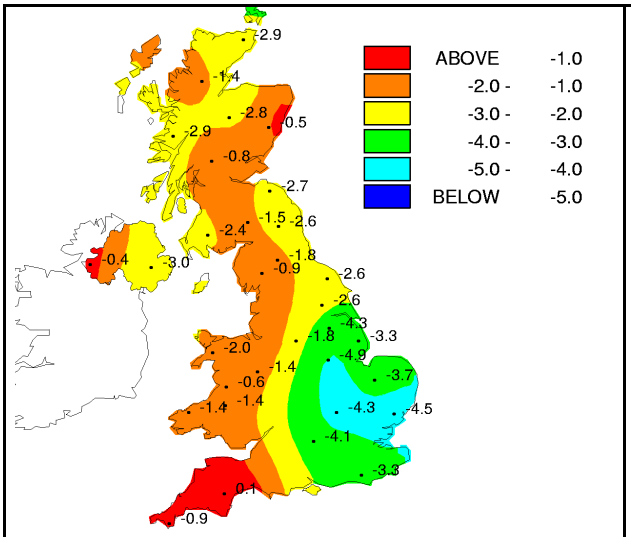

Figure 18a - Annual Percentage Decrease in non Seasalt Sulphate Concentrations (1986-1997)

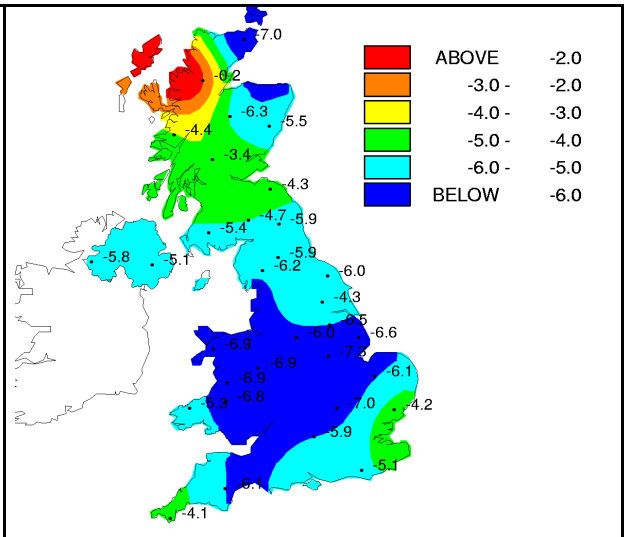

Figure 18b - Annual Percentage Decrease in Sulphur Dioxide Concentrations (1986-1997)

The different trends in wet and dry components of sulphur deposition of sulphur has caused a shift in the relative importance of the two components. In 1986, dry deposition accounted for 55% of the total deposition. By 1997, this had fallen to 45% with wet deposition now accounting for 55% of the total deposition.

A number of explanations have been suggested [RGAR, 1997] such as

- changing deposition velocity of sulphur dioxide leading to more efficient dry deposition
- the influence of the height of the sulphur emissions
- oxidant limitation controlling the extent of sulphur oxidation

More recently [NEGTAP, 1999], it has been suggested that increased offshore sulphur emissions had influenced the trends at the more remote sites.

5.2.2 Increase in Nitrate Concentrations outside the Source Region

The monitoring data show that nitrate concentrations have decreased in the source region and increased elsewhere, as shown in Figure 19.

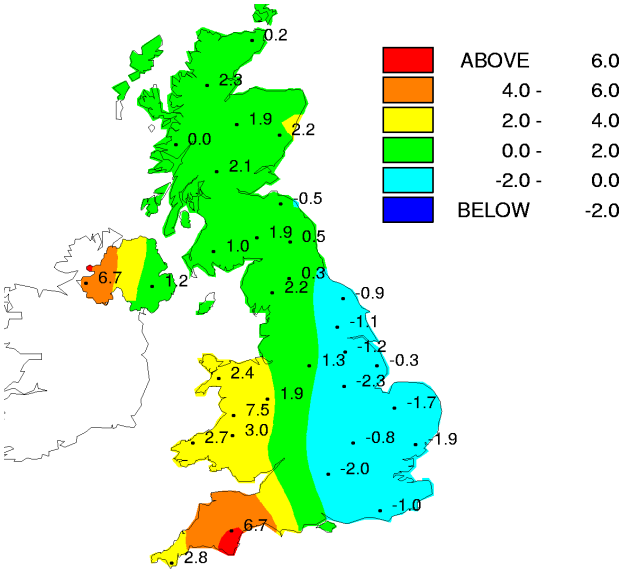

Figure 19: Increase in Nitrate Concentrations outside the Source Regions

5.2.3 The TRACK Model

The TRACK model is a receptor-oriented Lagrangian trajectory model which can be operated in either a single layer or multi-layer mode. Its structure has previously been described in some detail [Lee *et al.*, 1999a-1999d] and has common features with the HARM Acid Deposition model . Only a short description is given here.

The model solves the time dependence of a species concentration according to the following equation:

$$\frac{dc_i}{dt} = E_i + R_i(c_j) - v_{g_i} c_i / h - \Lambda_i c_i \qquad (1)$$

where:

c_i	concentration of species *i*;
E_i	emission rate of species *i*;
$R_i(c_j)$	rate of change of species i as a result of the chemical reactions of itself and other species *j*;
v_{gi}	dry deposition velocity of species *i* in the lowest box;
h	depth of the lowest box;
Λ_i	washout (wet deposition) coefficient of species *i*;

A very simple climatological approach is taken in estimating annual average concentrations and deposition. Precipitation data across the EMEP domain are taken from a global gridded long-term data set of 0.5º latitude × 0.5º longitude resolution [Legates and Willmott, 1990]. Air

parcels travel along straight-line trajectories at intervals of 15° to each receptor at a geostrophic wind speed of 7.5 m s^{-1} [Jones 1981] and the contribution of each trajectory arriving at a receptor is weighted for the UK scale model by precipitation roses which are either taken from measurements, or are modelled. For the European scale model, deposition is weighted by the nearest wind rose, taken from the European Wind Atlas [Troen and Petersen, 1989].

The model can be operated in a single or multi-layer mode. In the multi-layer version of the model, the vertical diffusion of species is described by the *K*-theory diffusion equation, based upon Monin-Obukhov similarity theory [e.g. Stull, 1988; Seinfeld, 1988]

The chemical scheme used in the model is a simpified treatment of the oxidation of sulphur and nitrogen species. The chemistry is treated explicitly as daytime and night-time reactions, rather than being diurnally averaged.

Sulphur dioxide is oxidised to sulphate *via* a number of homogeneous and heterogeneous pathways. The individual chemical reactions are not represented explicitly in the model. Instead, the overall oxidation rate of SO_2 to sulphate aerosol is expressed as:

$$(k_1.[OH] + 2.0 \times 10^{-6})\ s^{-1} \qquad (1)$$

The sulphur chemistry does include an explicit representation of dimethylsulphide (DMS) which partitions the sulphur dioxide (SO_2) into sulphate aerosol and methane sulphonic acid (MSA), *i.e.*:

$$DMS\ (\rightarrow CH_3SO_2) \rightarrow \alpha\ SO_2 + (1\text{-}\alpha)\ MSA \qquad (2)$$

Diurnal 2–D concentration fields for OH and NO_3 radicals have been used to drive some of the above reactions and these are prescribed using a global chemical transport model, STOCHEM [Collins *et al*., 1997]. The model is said to be linear as there is no feedback on the oxidant concentration fields.

The concentration of ozone (O_3) is treated very simply as a boundary condition of 34 ppbv. However, time dependent behaviour has been introduced through a parameterisation which leads to the regeneration of O_3 back to its boundary condition following consumption by chemical reactions. The time dependence is described by:

$$\frac{d[O_3]}{dt} = k\left(34 - [O_3]\right)/h \qquad (3)$$

where *k* is a constant ($6 \times 10^{-3}\ s^{-1}$) representing its removal at the ground by dry deposition.

5.2.4 TRACK Sensitivity Runs

Aqueous Phase Oxidation Rate of Sulphur Dioxide

As described in the previous section, the gas and aqueous-phase oxidation mechanisms control the formation of sulphate and its subsequent deposition in rainwater. In the TRACK model, this is represented as:

$$\frac{d\,[SO_4]}{dt} = (k_1[OH] + k_2) * [SO_2] \qquad (3)$$

where k_1 is the gas phase rate constant for reaction of SO_2 with OH. The effective first order rate coefficient is 0.8×10^{-6} s^{-1} and k_2 is the aqueous chemistry rate coefficient (2×10^{-6} s^{-1}).

The aqueous oxidation rate coefficient is expected to have increased because there is less sulphur dioxide present which has led to the pH of rain water increasing at some locations. The aqueous-phase oxidation of SO_2 by O_3 is very sensitive to the pH of the rainwater. To simulate this change, the values of the aqueous-phase rate coefficients used in the TRACK model were increased from 2×10^{-6} s^{-1} to 3.4×10^{-6} s^{-1}. Wet and dry deposition budgets were then determined for selected aqueous oxidation rate coefficients using constant emission fields appropriate for 1990. Figures 20a and 20b show how the wet and dry deposition components respond to this increase in the aqueous chemistry rate coefficient and their relative contribution to the total deposition. Not surprisingly, the wet deposition budget increases from 160 ktonnes per annum to over 200 ktonnes per annum. A rate coefficient of 3.4×10^{-6} s^{-1} is needed to account for the change in the relative proportion of dry and wet deposition from 1986 to 1997.

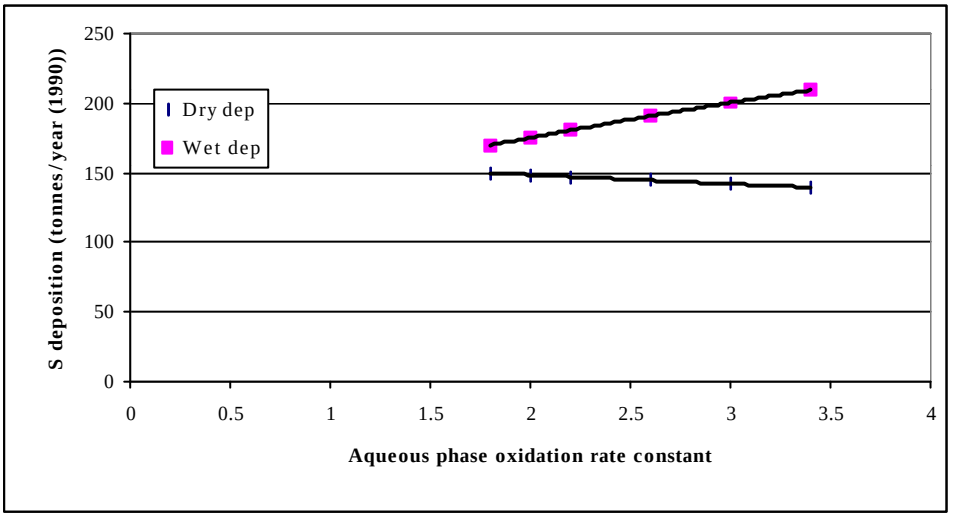

Figure 20a: Sensitivity of the Wet and Dry Deposition Budgets to the Aqueous Phase Rate Coefficient

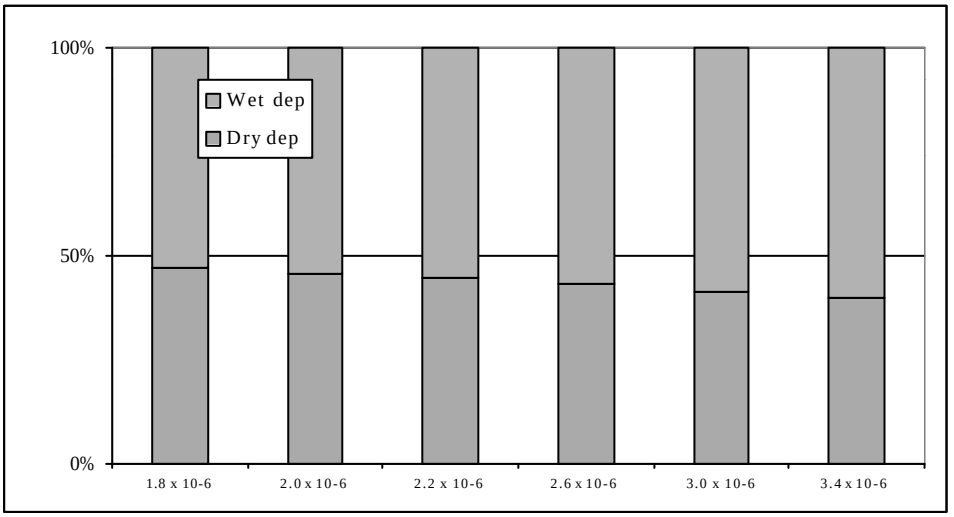

Figure 20b: Relative Contributions of Wet and Dry Deposition to the Total Deposition Budget as a function of the Aqueous Phase Rate Coefficient

It is unlikely that a change in the oxidation rate by itself could explain the observed pattern. It is more likely to be a combination of the explanations.

Increase in Nitrate Concentrations at Locations outside the Source Region

The nitrogen chemistry used in TRACK consists of the following reactions:

Daytime Chemistry

$$NO + O_3 \rightarrow NO_2 + O_2$$
$$NO_2 + h\nu \rightarrow NO + O$$

$$OH + NO_2 \rightarrow HNO_3$$
$$OH + NO \rightarrow HONO$$
$$HONO + h\nu \rightarrow OH + NO$$

$$CH_3COO_2 + NO_2 \rightarrow CH_3COO_2NO_2\ (PAN)$$
$$CH_3COO_2NO_2 \rightarrow CH_3COO_2 + NO_2$$

Night-time Chemistry

$$NO_2 + O_3 \rightarrow NO_3 + O_2$$
$$NO_2 + NO_3 \rightarrow N_2O_5$$

The concentration fields of OH, NO_3 and CH_3COO_2 were prescribed. Sensitivity calculations were undertaken to investigate the sensitivity of nitrogen deposition to increases in ozone concentrations from 25 to 50 ppb. Figure 21 shows that the oxidation of NO_2 to nitrate and its subsequent wet deposition respond strongly to a change in the O_3 concentration.

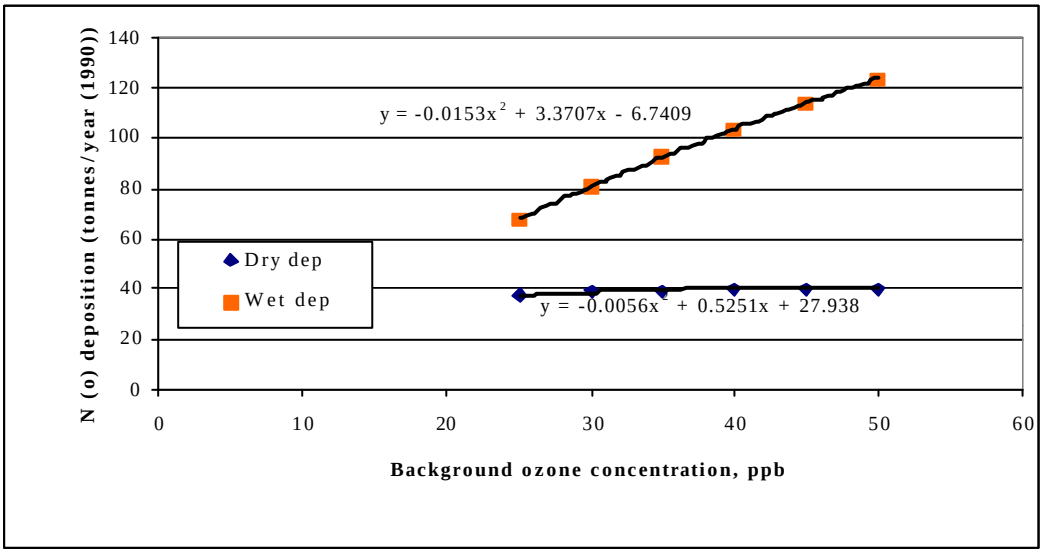

Figure 21: Sensitivity of the Wet and Dry Deposition Budgets to the Background Ozone Concentration

Oxidised nitrogen wet deposition is particularly influenced by the night-time chemistry of ozone whereas the dry deposition of NO_2 and HNO_3 are controlled by day-time chemistry involving the OH radical.

The sensitivity of the system was also tested using a small increase in ozone concentration, such as that observed at the Strathvaich Dam site in Scotland (Figure 22). In 1986, the annual mean concentration was 32.1 ppb and this had increased to 34.7 ppb in 1997. Model calculations were undertaken using these two ozone concentrations. The emission fields were again taken for 1990. The calculated percentage increase in the wet deposition of oxidised nitrogen is shown in Figure 23.

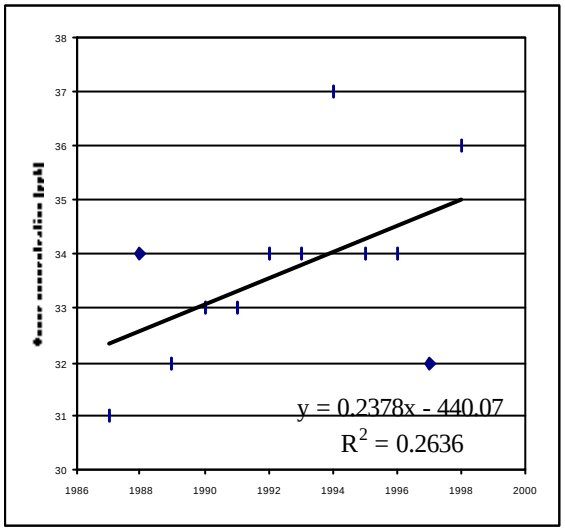

Figure 22: Trend in Ozone Concentration at Strathvaich Dam

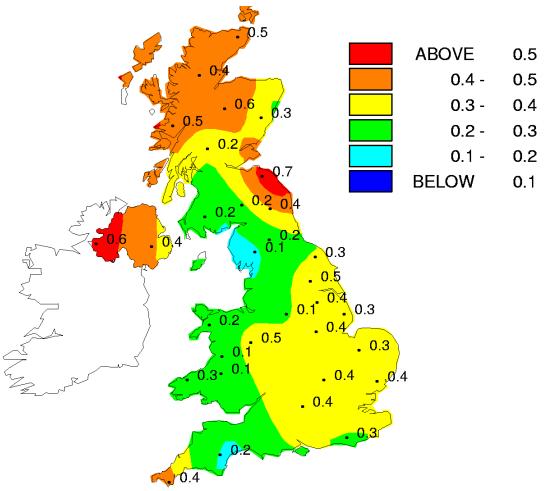

Figure 23: Predicted % increase in N(o) wet deposition for a change in the ozone concentration from 32.1 to 34.7 ppb

The largest increases are calculated to be in Scotland, with increases of 0.4-0.5%. The relatively small change in ozone concentration do not appear to account completely for the changes in the wet deposition of nitrate observed (see Figure 19).

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7. Acknowledgements

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We would like to acknowledge the enthusiasm and contribution of Glenn Campbell who led the monitoring programme until October 1998.

Thanks are due to the site operators, all of whom conscientiously serviced the equipment regardless of adverse weather conditions.

Appendices

CONTENTS

Appendix 1
Weekly data, 1998

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 (except those for 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 collocated sampling instrumentation, are given below:

- WOC — Wet-only collector for daily measurement of rainfall composition
- DT — Monthly diffusion tube. Measurement for nitrogen dioxide
- Daily SO_2 — Daily measurements of SO_2, by hydrogen peroxide bubbler and of particulate sulphate on a Whatman 40 filter with ion chromatographic analysis
- Weekly SO_2 — Weekly measurements of SO_2 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
- SO_2 — Hourly measurements of SO_2
- 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 '-'s. 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} was taken as evidence of contamination by birds and these samples were not included in the tables, or 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

1998

Site Code:	5003
Easting:	1723
Northing:	214
Latitude :	50 02 54 N
Longitude:	5 10 52 W
Altitude (m):	108
Rainfall (mm):	973

Site environment:

Open moorland, Satellite tracking station

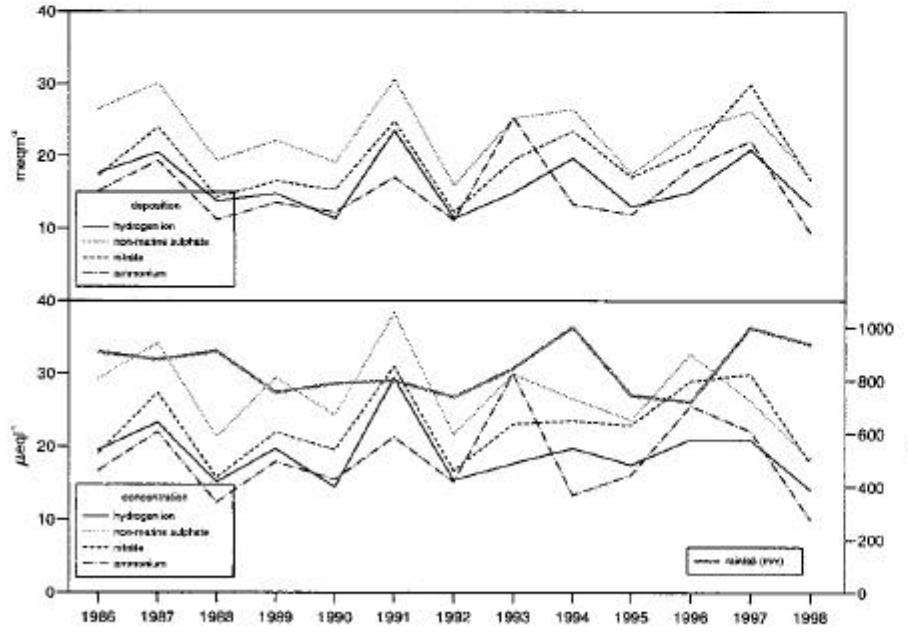
Other measurements:

DT

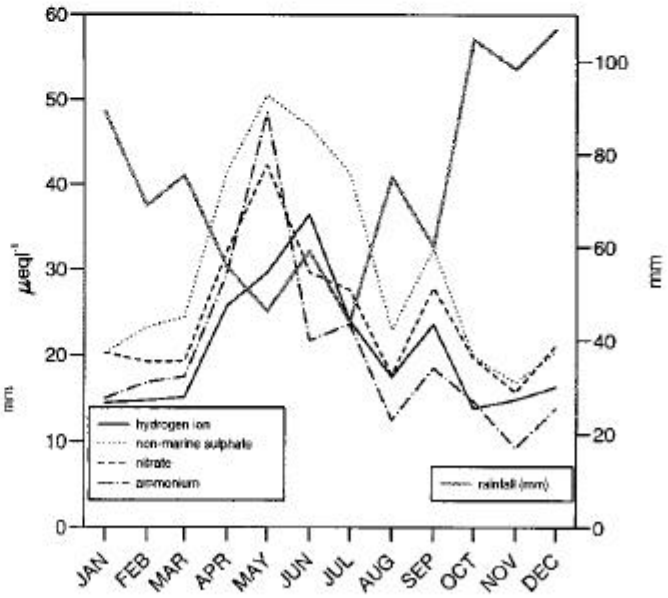
Site operator:

British Telecom

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
09/01/98	6.2	97.6	37.6	23.9	557.9	155.0	96.3	629.9	12.4	< 9.7	30.4	103.0	.6	15.5
15/01/98	4.9	54.8	12.0	< 2.1	337.2	101.2	26.6	391.3	6.5	< 9.7	14.1	68.0	13.8	29.2
22/01/98	5.3	377.6	706.1	155.5	1519.9	364.7	119.2	1414.5	38.7	< 9.7	194.5	-	5.0	1.7
05/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
15/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
18/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/02/98	5.6	60.1	12.4	5.8	338.8	105.6	60.8	380.0	7.3	< 9.7	19.3	61.0	2.6	37.5
06/03/98	5.2	79.2	12.5	< 2.1	575.3	150.9	45.3	610.5	12.5	< 9.7	9.9	92.0	6.8	14.9
12/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/03/98	7.7	169.0	65.7	946.8	135.0	94.0	91.5	135.8	143.0	431.3	152.7	134.0	.0	4.3
25/03/98	6.6	95.1	20.5	146.3	380.6	164.4	60.4	408.6	31.9	76.3	49.3	94.0	.3	35.3
03/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
08/04/98	4.8	73.5	23.3	21.2	361.3	98.2	31.0	369.4	10.9	< 9.7	30.0	68.0	15.1	16.8
17/04/98	6.4	48.8	14.9	166.7	129.1	89.2	115.3	141.3	35.0	51.4	33.3	41.0	.4	26.6
24/04/98	7.6	170.7	48.0	568.1	160.4	87.6	126.5	169.2	64.0	133.4	151.4	105.0	.0	74.8
14/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/05/98	6.4	77.3	55.5	123.6	120.3	80.3	55.5	129.8	19.0	41.8	62.8	43.0	.4	26.3
03/06/98	4.6	42.4	29.4	24.2	126.4	33.2	11.1	139.4	2.7	< 9.7	27.1	38.0	23.4	30.4
11/06/98	4.7	37.1	13.4	< 2.1	134.6	35.5	14.4	150.8	2.3	< 9.7	20.9	32.0	19.5	8.3
18/06/98	5.3	58.3	32.0	21.6	153.9	47.1	63.0	169.1	4.5	< 9.7	39.8	38.0	4.8	15.2
25/06/98	5.0	28.9	6.2	< 2.1	129.4	36.0	13.4	146.5	2.7	< 9.7	13.4	29.0	11.2	9.6
02/07/98	5.4	40.4	27.8	17.8	115.1	58.0	69.8	118.4	3.4	< 9.7	26.5	25.0	4.2	4.7
09/07/98	4.9	35.2	7.8	7.8	128.6	37.5	11.7	145.2	2.8	< 9.7	19.7	30.0	12.0	27.0
16/07/98	4.6	34.5	9.6	5.4	79.0	25.9	8.6	85.6	2.1	< 9.7	25.0	27.0	22.9	29.7
22/07/98	4.7	47.2	16.5	12.3	168.9	45.3	14.3	183.6	5.6	< 9.7	26.8	38.0	21.4	13.3
31/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
06/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13/08/98	4.8	39.5	11.4	4.6	168.1	48.7	23.7	184.9	5.0	< 9.7	19.2	37.0	14.8	9.3
20/08/98	6.3	73.5	9.4	82.3	156.7	110.2	78.8	166.5	29.0	88.1	54.7	40.0	.5	5.3
27/08/98	4.6	37.9	29.6	12.5	57.6	19.7	14.4	58.1	1.8	< 9.7	30.9	26.0	25.7	18.4
03/09/98	4.8	52.8	8.4	< 2.1	311.2	82.2	23.2	345.4	7.2	< 9.7	15.3	60.0	15.1	17.8
09/09/98	7.0	83.3	5.9	212.7	420.9	202.0	129.6	459.0	42.4	82.8	32.6	97.0	.1	19.8
16/09/98	6.7	82.5	48.3	276.8	166.8	74.2	34.5	181.3	22.4	72.8	62.4	60.0	.2	33.7
01/10/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
08/10/98	5.0	34.9	11.7	13.1	156.2	46.1	15.4	176.5	3.7	< 9.7	16.0	34.0	9.5	16.7
16/10/98	4.7	27.7	9.7	2.7	133.6	37.4	10.4	150.7	2.7	< 9.7	11.6	31.0	20.9	44.7
22/10/98	5.1	61.7	3.6	< 2.1	474.2	125.6	29.8	519.7	9.6	< 9.7	4.6	81.0	8.1	39.0
29/10/98	5.1	37.6	5.6	2.9	251.5	76.0	21.1	279.5	5.3	< 9.7	7.3	48.0	8.1	40.1
04/11/98	4.8	64.1	11.8	6.1	395.8	100.7	26.2	443.8	8.0	< 9.7	16.4	65.0	14.5	35.0
13/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/11/98	4.5	49.5	51.8	31.8	212.5	52.7	13.3	224.6	5.8	< 9.7	23.9	31.0	32.4	66.1
25/11/98	5.6	52.3	8.7	8.4	370.6	98.4	33.1	410.5	12.9	< 9.7	7.7	60.0	2.4	2.1
03/12/98	4.7	49.3	19.7	12.9	201.3	51.9	15.8	223.8	4.0	< 9.7	25.1	43.0	20.9	16.1
10/12/98	5.0	36.8	10.4	4.4	219.0	65.3	16.9	238.5	4.1	< 9.7	10.4	40.0	10.7	75.6
23/12/98	5.2	74.3	4.5	3.5	542.1	148.1	37.7	624.9	11.3	< 9.7	9.0	94.0	7.1	40.6
31/12/98	5.4	99.9	7.5	< 2.1	794.0	334.9	59.2	903.9	16.3	< 9.7	4.3	136.0	4.2	32.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5003	5.0	52.5	18.0	9.6	292.4	86.6	26.9	324.3	6.4	15.8	17.3	54.1	14.2	935.6

Yarner Wood

1998

Site Code:	5008
Easting:	2786
Northing:	789
Latitude :	50 35 48 N
Longitude:	3 42 56 W
Altitude (m):	119
Rainfall (mm):	1377

Site environment:

Open moorland, Nature Reserve

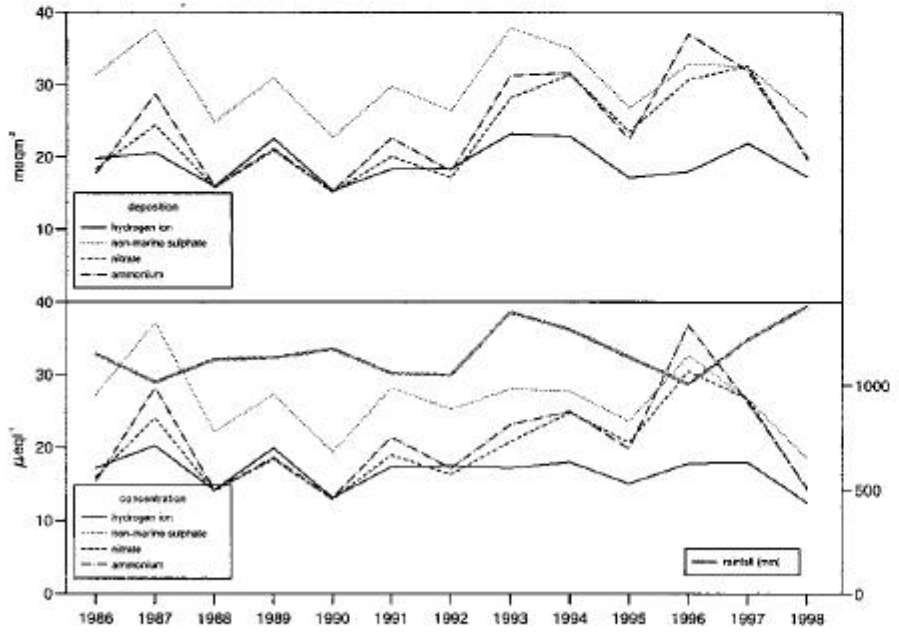
Other measurements:

WOC, DT, Daily SO_2, ozone, EMEP

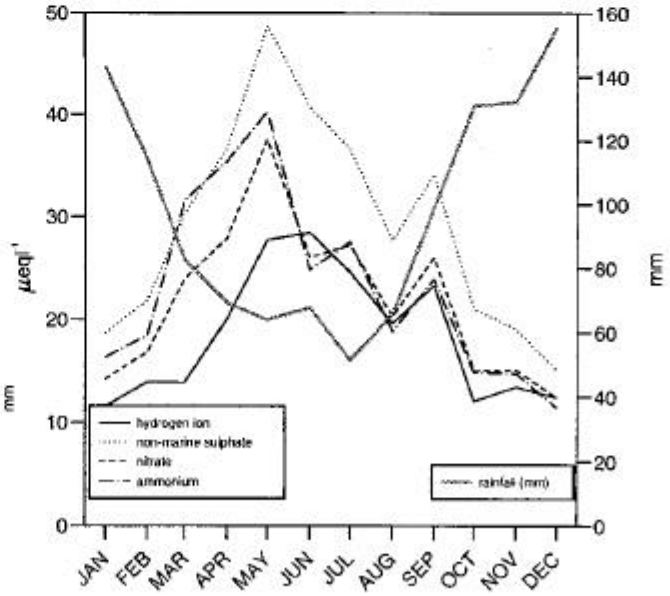
Site operator:

English Nature

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 ($\mu eq l^{-1}$)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.4	49.9	14.2	16.0	265.7	81.0	35.4	295.4	5.3	< 9.7	17.9	49.0	4.4	50.3
14/01/98	5.1	30.1	6.6	4.7	167.0	58.8	18.1	193.8	3.9	< 9.7	10.0	33.0	7.6	55.4
21/01/98	5.1	49.8	42.0	49.2	37.7	16.1	39.1	37.2	8.6	< 9.7	45.2	21.0	7.6	2.6
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/02/98	4.9	61.3	60.2	42.3	194.3	57.2	31.5	205.6	6.7	< 9.7	37.9	47.0	12.3	6.6
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	5.4	58.5	31.7	29.8	206.5	63.9	50.4	218.1	8.1	< 9.7	33.6	43.0	4.1	6.2
25/02/98	5.6	25.8	8.0	5.9	86.5	37.1	52.6	92.2	2.0	< 9.7	15.4	20.0	2.6	60.7
04/03/98	5.0	42.2	22.2	15.5	204.8	64.9	21.8	227.1	4.4	< 9.7	17.5	45.0	11.2	43.1
11/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
19/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
24/03/98	5.6	45.5	36.9	64.6	26.3	21.2	62.4	26.6	3.3	< 9.7	42.3	20.0	2.6	15.6
31/03/98	5.0	47.6	10.4	10.3	309.5	58.8	30.3	348.9	6.1	< 9.7	10.3	59.0	9.1	72.2
08/04/98	4.5	45.6	25.8	28.6	28.6	9.5	9.4	31.1	< 1.3	< 9.7	42.2	21.0	30.9	27.7
15/04/98	5.2	32.3	16.5	49.0	61.7	59.0	34.9	63.8	11.3	< 9.7	24.9	21.0	6.8	33.1
21/04/98	4.8	39.9	19.3	22.3	79.3	30.7	20.4	88.8	1.9	< 9.7	30.4	27.0	15.1	53.4
29/04/98	4.3	118.6	111.0	108.1	107.9	29.9	40.8	122.8	8.6	< 9.7	105.6	62.0	52.5	4.9
06/05/98	7.1	166.7	64.3	514.1	125.9	75.8	666.7	124.9	65.6	173.6	151.6	89.0	.1	6.1
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.7
27/05/98	4.6	41.9	39.4	43.5	32.9	11.9	15.0	33.6	< 1.3	< 9.7	37.9	26.0	25.1	43.6
03/06/98	4.5	36.6	38.0	27.5	46.5	15.3	10.8	49.9	< 1.3	< 9.7	31.0	29.0	30.2	42.5
10/06/98	4.8	32.6	13.4	9.9	95.2	27.2	12.9	104.1	3.7	< 9.7	21.2	27.0	14.8	11.8
17/06/98	4.2	94.1	75.9	17.1	88.1	24.3	54.0	95.3	4.2	< 9.7	83.5	56.0	66.1	5.3
24/06/98	4.9	16.9	6.5	< 2.1	49.8	16.2	6.8	55.3	< 1.3	< 9.7	10.9	15.0	12.0	36.1
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
08/07/98	5.1	10.6	4.9	< 2.1	10.1	6.7	9.3	15.5	< 1.3	< 9.7	9.4	< 10.0	8.3	19.3
15/07/98	4.8	18.0	8.4	7.9	17.8	6.6	5.3	21.0	< 1.3	< 9.7	15.9	12.0	14.1	42.3
22/07/98	4.6	49.2	19.6	21.4	68.7	19.0	17.0	72.9	2.5	< 9.7	40.9	26.0	22.9	12.6
29/07/98	4.6	51.2	36.0	19.5	147.5	44.4	43.1	161.7	7.2	< 9.7	33.4	38.0	25.7	2.3
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/98	5.5	13.3	< 2.1	< 2.1	13.1	8.1	20.1	14.6	2.9	< 9.7	11.8	< 10.0	3.4	5.9
19/08/98	5.2	17.8	5.3	6.4	47.0	22.3	13.7	49.8	2.0	< 9.7	12.1	14.0	6.3	14.9
26/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/09/98	5.0	26.4	10.2	12.1	70.4	27.4	12.6	78.0	3.1	< 9.7	17.9	20.0	10.0	46.9
08/09/98	5.0	29.9	5.3	3.4	172.9	55.4	16.8	197.9	3.8	< 9.7	9.1	35.0	10.5	30.7
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
22/09/98	4.6	48.8	29.0	37.8	79.3	23.4	9.6	86.4	2.8	< 9.7	39.2	32.0	23.4	51.5
30/09/98	4.9	31.0	17.6	16.4	103.4	29.4	9.4	121.0	2.2	< 9.7	18.5	26.0	12.6	32.2
07/10/98	5.8	34.9	14.0	23.8	117.8	41.8	45.9	135.8	3.7	< 9.7	20.7	27.0	1.5	4.8
14/10/98	4.7	30.4	8.2	3.4	79.3	22.4	6.9	89.7	2.5	< 9.7	20.8	24.0	20.0	48.3
21/10/98	4.9	31.8	4.1	3.9	184.4	57.1	19.3	211.1	4.1	< 9.7	9.5	38.0	12.3	119.0
28/10/98	5.1	29.0	3.4	4.1	196.7	63.1	17.8	223.1	4.2	< 9.7	5.3	38.0	7.4	64.6
04/11/98	4.9	26.9	11.1	8.6	78.8	24.9	10.3	88.7	2.3	< 9.7	17.4	23.0	13.8	60.1
11/11/98	5.2	35.7	7.3	8.4	232.3	68.4	20.2	257.6	5.0	< 9.7	7.7	38.0	7.1	21.8
18/11/98	4.9	25.0	33.8	24.6	47.8	17.1	15.5	47.8	1.7	< 9.7	19.3	20.0	12.6	22.6
25/11/98	5.0	54.6	16.5	24.0	262.7	64.7	27.7	287.2	6.9	< 9.7	22.9	-	10.0	1.6
02/12/98	4.9	30.2	16.3	22.1	57.9	19.7	15.1	64.0	2.1	< 9.7	23.2	20.0	11.5	12.8
09/12/98	4.8	33.5	16.1	17.2	89.7	28.0	12.0	102.0	2.0	< 9.7	22.7	26.0	14.1	22.5
16/12/98	5.1	18.0	7.6	6.5	66.1	26.5	10.5	75.6	1.6	< 9.7	10.1	16.0	8.7	45.4
23/12/98	5.3	24.5	3.7	5.2	146.5	59.0	19.5	168.7	2.9	< 9.7	6.8	30.0	5.4	68.8
30/12/98	5.0	41.2	8.5	6.1	252.2	75.6	21.2	277.8	4.5	< 9.7	10.8	50.0	9.8	53.8
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5008	5.0	33.8	14.2	14.4	127.4	40.8	19.6	142.8	3.3	< 8.9	18.4	30.7	12.5	1383.1

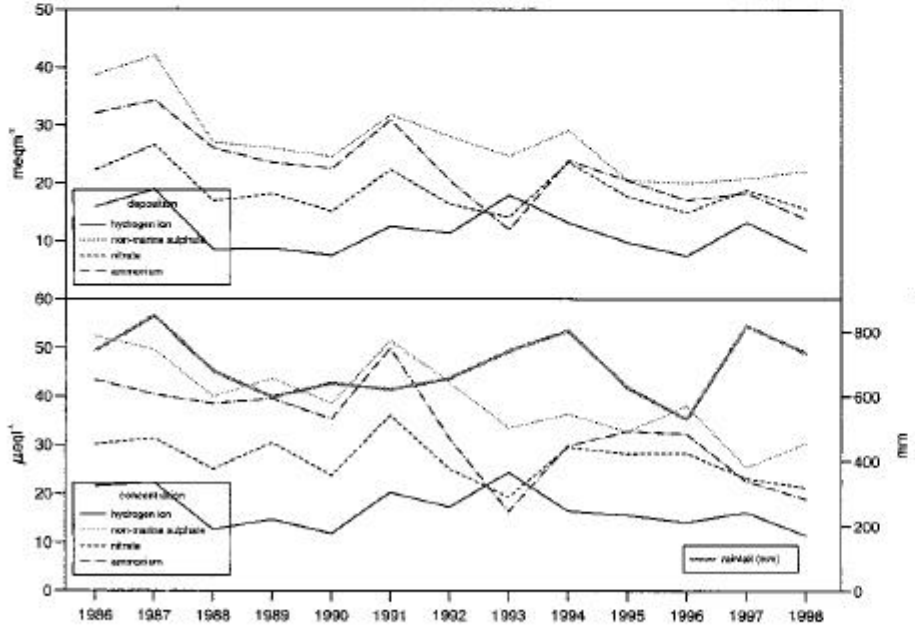
Barcombe Mills

1998

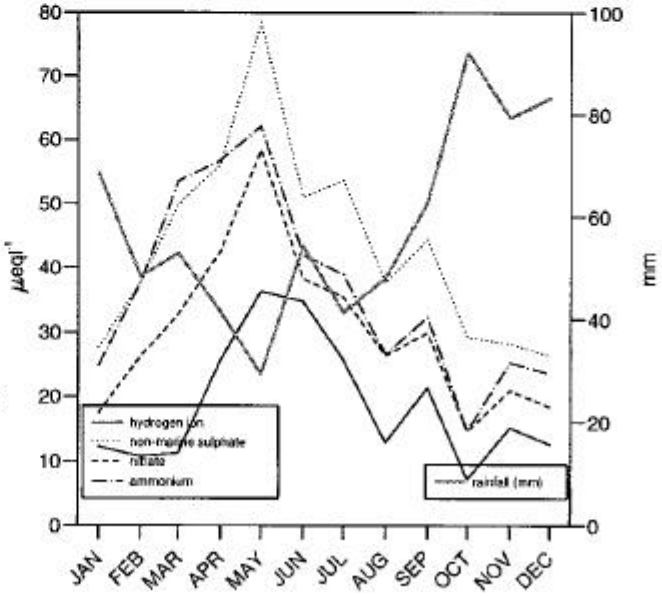
Site Code:	5007
Easting:	5437
Northing:	1149
Latitude :	50 54 54 N
Longitude:	0 02 40 E
Altitude (m):	10
Rainfall (mm):	876

Site environment:
Water pumping site
Other measurements:
DT, Daily SO_2, EMEP
Site operator:
South East Water plc

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.3	62.4	14.4	13.8	329.1	96.8	42.9	369.2	10.5	< 9.7	22.8	64.0	5.4	15.5
14/01/98	4.9	50.0	12.0	10.3	290.0	86.1	26.2	311.2	5.5	< 9.7	15.1	58.0	12.0	16.8
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
04/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	5.3	70.7	47.8	67.5	80.9	27.2	64.6	90.5	3.1	< 9.7	60.9	32.0	5.1	5.8
25/02/98	5.9	55.3	18.6	28.7	148.4	53.3	87.5	165.3	4.6	< 9.7	37.4	36.0	1.3	28.1
03/03/98	5.2	58.6	13.3	7.6	316.3	98.4	45.4	366.4	10.1	< 9.7	20.5	64.0	6.9	22.5
10/03/98	4.8	89.6	57.9	63.7	377.0	102.1	38.4	416.0	9.5	< 9.7	44.2	82.0	-	10.1
17/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
24/03/98	4.8	74.1	68.4	105.9	70.4	25.9	22.0	77.8	8.8	< 9.7	65.6	40.0	16.2	10.5
31/03/98	4.9	52.6	13.1	17.3	251.8	42.9	34.4	342.5	8.4	< 9.7	22.3	53.0	11.7	26.1
07/04/98	4.5	35.2	33.5	19.9	31.1	10.4	12.4	33.5	4.0	< 9.7	31.4	26.0	28.2	46.2
21/04/98	5.4	26.7	13.9	18.3	68.4	37.8	38.4	76.1	2.7	< 9.7	18.5	19.0	4.4	18.0
28/04/98	5.6	271.9	232.5	344.4	297.0	100.1	618.1	271.2	68.9	33.0	236.1	-	2.5	1.2
05/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
22/05/98	6.1	41.2	39.6	73.6	13.5	20.0	158.3	17.4	16.3	12.7	39.6	18.0	.7	4.7
26/05/98	4.4	63.6	50.2	51.2	21.0	7.7	24.2	33.3	3.1	< 9.7	61.1	32.0	38.9	11.2
02/06/98	5.3	31.5	20.0	24.2	65.6	38.4	56.6	72.3	6.0	< 9.7	23.6	21.0	4.8	14.7
09/06/98	4.7	27.8	9.2	< 2.1	76.8	20.9	7.6	84.1	1.6	< 9.7	18.6	24.0	20.0	33.2
16/06/98	4.1	190.9	129.1	50.7	117.2	49.3	98.7	127.4	34.6	< 9.7	176.8	84.0	77.6	1.8
23/06/98	4.8	22.1	9.5	5.1	38.4	12.4	10.8	43.8	1.9	< 9.7	17.5	16.0	14.1	32.1
30/06/98	4.0	137.1	107.1	82.5	18.3	7.4	31.2	19.4	6.4	< 9.7	134.9	66.0	97.7	4.5
07/07/98	4.9	33.4	9.9	2.5	96.1	30.0	25.8	115.4	8.2	< 9.7	21.9	25.0	13.2	19.5
14/07/98	5.5	45.9	26.0	25.6	65.6	32.8	66.2	66.0	5.5	< 9.7	37.9	20.0	3.5	8.0
23/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
28/07/98	4.7	37.9	59.6	50.6	19.3	9.2	35.4	21.3	3.0	< 9.7	35.6	24.0	20.4	13.7
04/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
18/08/98	6.3	46.0	21.6	< 2.1	138.8	64.3	165.5	157.4	16.8	< 9.7	29.3	31.0	.5	5.3
25/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
01/09/98	5.2	53.3	34.5	6.9	42.7	28.6	94.5	79.9	36.8	< 9.7	48.1	27.0	6.3	36.6
08/09/98	6.1	33.4	7.0	33.8	130.3	97.3	93.4	147.1	9.2	17.0	17.7	29.0	.9	24.6
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/09/98	5.1	65.4	79.2	115.4	12.8	7.7	44.1	14.8	7.5	< 9.7	63.9	29.0	7.6	9.0
29/09/98	4.8	31.8	21.6	24.1	64.0	18.8	8.8	73.5	1.8	< 9.7	24.0	27.0	14.1	42.0
06/10/98	5.8	51.2	13.1	2.9	98.8	38.8	84.9	143.7	44.8	< 9.7	39.3	33.0	1.7	11.6
13/10/98	6.0	75.9	12.1	< 2.1	207.8	65.8	112.2	237.6	47.2	< 9.7	50.9	52.0	1.0	13.4
20/10/98	6.1	70.1	< 2.1	< 2.1	342.2	99.5	117.2	395.4	28.9	< 9.7	28.9	71.0	.8	58.6
27/10/98	6.3	56.8	< 2.1	< 2.1	244.0	75.1	113.0	283.9	23.1	< 9.7	27.4	53.0	.5	47.5
03/11/98	4.8	60.2	25.9	29.6	192.3	52.9	27.5	220.0	6.9	< 9.7	37.0	47.0	14.8	11.1
10/11/98	5.0	22.3	14.6	12.3	87.9	29.3	13.8	106.6	2.4	< 9.7	11.7	20.0	9.8	11.2
17/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/11/98	4.5	53.7	58.8	65.4	69.5	17.8	9.8	77.7	2.2	< 9.7	45.3	36.0	33.9	8.0
01/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
08/12/98	4.8	31.9	21.8	23.7	64.1	19.9	8.4	74.0	2.1	< 9.7	24.2	24.0	15.5	27.4
15/12/98	4.7	79.1	48.5	65.4	200.7	53.8	29.0	223.9	6.0	< 9.7	54.9	50.0	20.4	2.8
22/12/98	5.1	37.8	11.4	9.8	185.4	60.2	23.9	215.7	6.1	< 9.7	15.5	39.0	7.2	49.7
29/12/98	5.0	52.7	13.2	13.6	320.2	92.3	30.5	352.0	6.9	< 9.7	14.1	62.0	9.1	26.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5007	12.1	48.4	20.5	18.4	154.1	47.8	48.6	179.7	11.5		29.8	39.9	11.3	733.3

Compton

1998

Site Code:	5129
Easting:	4512
Northing:	1804
Latitude :	51 31 11 N
Longitude:	1 15 43 W
Altitude (m):	105
Rainfall (mm):	707

Site environment:

Rough meadow, near pumping station

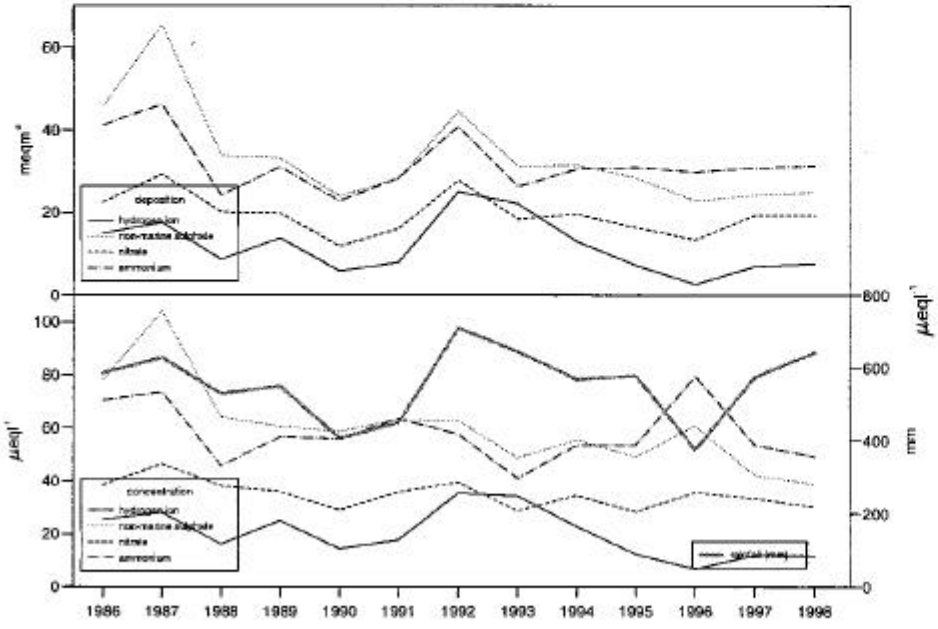
Other measurements:

DT

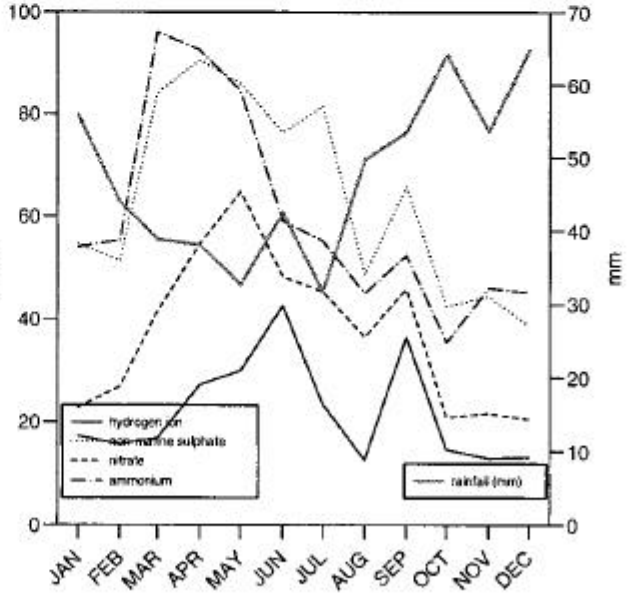
Site operator:

AEA Technology plc

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeq l⁻¹)



start.date	pH	SO_4	NO_3	NH_4	Na	Mg	Ca	Cl	K	PO_4	$nmSO_4$	cond	H	rain
		μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μeql^{-1}	μScm^{-1}	μeql^{-1}	mm
05/01/98	5.2	54.8	18.4	41.0	137.5	49.1	32.0	155.9	3.0	< 9.7	38.3	35.0	6.5	18.8
14/01/98	5.8	26.3	11.3	24.8	79.7	38.8	30.0	90.7	< 1.3	< 9.7	16.7	19.0	1.7	18.8
19/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
02/02/98	6.0	131.8	67.2	124.4	232.1	51.9	105.2	242.0	11.1	< 9.7	103.9	62.0	.9	2.3
09/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/02/98	7.0	168.0	63.2	199.6	172.7	47.0	167.8	195.3	8.0	< 9.7	147.2	66.0	.1	2.0
23/02/98	6.4	38.9	14.7	59.2	83.9	37.7	66.8	91.2	2.3	< 9.7	28.8	25.0	.4	18.9
04/03/98	6.4	19.7	7.5	35.3	51.1	29.8	52.4	57.8	1.4	< 9.7	13.5	16.0	.4	13.5
09/03/98	6.6	111.4	55.2	154.1	193.8	64.6	108.3	223.3	7.4	< 9.7	88.0	57.0	.3	3.3
16/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/03/98	6.2	62.9	42.5	117.5	11.5	11.0	104.7	15.4	< 1.3	< 9.7	61.6	24.0	.6	11.7
30/03/98	6.1	47.0	20.3	51.5	127.1	48.0	200.5	138.5	26.5	< 9.7	31.7	48.0	.7	28.2
06/04/98	6.9	335.5	5.7	3207.1	132.1	53.1	884.3	101.3	213.1	302.0	319.6	372.0	.1	33.2
14/04/98	4.6	46.0	31.3	34.8	19.1	5.6	16.3	25.8	1.4	< 9.7	43.7	26.0	26.9	27.1
20/04/98	5.8	55.2	33.7	57.5	70.1	41.4	99.2	77.3	5.7	< 9.7	46.8	28.0	1.7	12.6
27/04/98	4.8	89.3	56.7	88.2	24.4	11.1	59.9	29.8	1.9	< 9.7	86.3	31.0	14.8	13.5
05/05/98	6.8	211.9	159.7	141.3	212.6	72.5	846.8	213.9	22.0	10.1	186.3	90.0	.2	1.9
11/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/05/98	6.6	90.9	62.7	123.3	15.1	12.4	191.2	20.6	5.5	< 9.7	89.1	33.0	.3	4.4
26/05/98	4.2	148.2	166.5	206.2	51.9	15.3	46.4	51.3	3.4	< 9.7	142.0	73.0	61.7	5.7
01/06/98	4.8	69.4	45.1	63.7	19.7	6.8	18.7	22.2	1.6	< 9.7	67.1	32.0	16.6	16.0
08/06/98	5.0	32.1	20.8	33.6	14.7	10.7	23.6	18.8	2.2	< 9.7	30.3	15.0	10.5	28.0
15/06/98	6.3	78.5	77.2	118.4	31.9	22.9	120.4	32.7	12.6	< 9.7	74.7	30.0	.5	3.7
22/06/98	6.0	18.2	13.9	31.5	34.1	31.9	44.3	37.8	2.0	< 9.7	14.0	13.0	1.0	17.9
29/06/98	6.2	39.4	23.9	56.5	12.9	17.5	84.5	15.4	3.7	< 9.7	37.9	15.0	.7	4.7
06/07/98	5.0	73.2	35.4	67.9	19.1	8.4	44.5	24.1	2.9	< 9.7	70.9	24.0	10.5	11.1
13/07/98	6.8	45.0	20.5	100.0	54.0	39.7	141.4	58.3	5.2	< 9.7	38.5	26.0	.2	4.6
20/07/98	5.3	181.3	154.0	124.7	164.5	64.2	753.2	149.0	28.9	< 9.7	161.5	-	5.0	1.0
27/07/98	6.0	66.4	101.3	93.5	36.2	26.9	539.7	37.9	6.8	< 9.7	62.0	31.0	1.0	4.6
03/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/08/98	6.9	55.3	79.7	29.0	43.0	29.2	959.5	46.1	18.4	< 9.7	50.1	42.0	.1	1.6
17/08/98	6.8	29.1	24.3	20.2	31.4	26.0	824.6	37.4	15.9	< 9.7	25.3	23.0	.2	6.6
24/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.7
02/09/98	4.3	57.7	84.4	77.4	18.6	5.5	12.9	23.5	2.0	< 9.7	55.5	40.0	46.8	33.6
07/09/98	6.3	32.9	12.6	42.3	124.2	92.7	80.7	140.5	3.8	< 9.7	17.9	29.0	.5	14.9
14/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/09/98	4.4	48.7	41.3	46.5	4.0	< 4.1	24.9	10.4	< 1.3	< 9.7	48.2	27.0	38.9	31.3
28/09/98	4.5	73.1	65.0	80.3	59.5	16.7	19.6	71.9	2.1	< 9.7	65.9	42.0	33.9	12.6
05/10/98	4.2	135.4	123.1	157.1	158.3	38.0	35.7	181.4	5.9	< 9.7	116.3	77.0	56.2	5.9
12/10/98	5.9	18.8	7.9	19.5	16.0	13.4	28.6	21.5	1.9	< 9.7	16.8	< 10.0	1.3	16.0
19/10/98	5.5	24.0	7.5	7.1	73.9	30.6	45.3	103.7	19.4	< 9.7	15.1	23.0	3.3	40.3
26/10/98	5.1	22.3	10.1	11.6	60.4	21.7	18.0	72.1	4.0	< 9.7	15.0	19.0	7.4	32.6
02/11/98	5.0	34.2	14.8	22.6	51.0	18.6	16.0	61.0	2.8	< 9.7	28.0	21.0	11.2	29.8
09/11/98	5.2	29.3	12.7	23.2	74.2	30.5	26.3	90.7	2.4	< 9.7	20.3	18.0	5.9	13.2
16/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/11/98	5.3	48.7	30.4	72.8	41.6	17.7	26.2	49.2	1.5	< 9.7	43.6	22.0	5.5	11.3
30/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
07/12/98	6.2	53.3	23.8	93.9	45.4	20.8	16.2	48.1	2.1	< 9.7	47.8	24.0	.6	14.3
14/12/98	5.3	37.9	20.3	51.7	62.5	29.1	20.9	68.3	2.0	< 9.7	30.4	22.0	5.2	10.8
21/12/98	5.8	20.7	6.9	18.9	64.5	36.5	18.6	74.6	1.7	< 9.7	12.9	17.0	1.7	36.9
28/12/98	5.2	38.1	14.2	27.9	128.1	44.6	19.6	150.6	3.3	< 9.7	22.6	32.0	6.6	21.7
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5129	5.4	44.5	29.4	48.2	58.1	26.0	61.0	68.3	5.0	6.5	37.5	26.7	11.4	641.7

Flatford Mill

1998

Site Code:	5024
Easting:	6077
Northing:	2333
Latitude :	51 57 32 N
Longitude:	1 01 24 E
Altitude (m):	5
Rainfall (mm):	599

Site environment:

Open meadow near River Stour

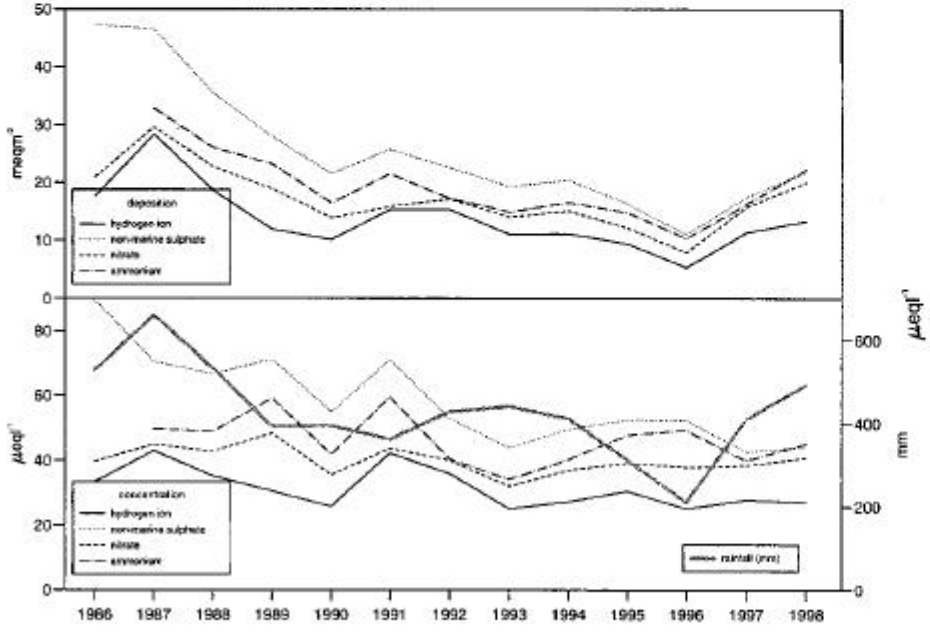
Other measurements:

DT

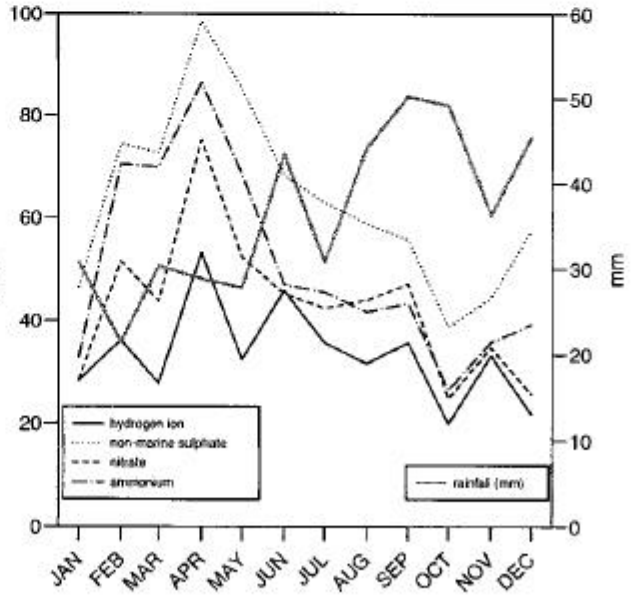
Site operator:

Field Studies Council

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



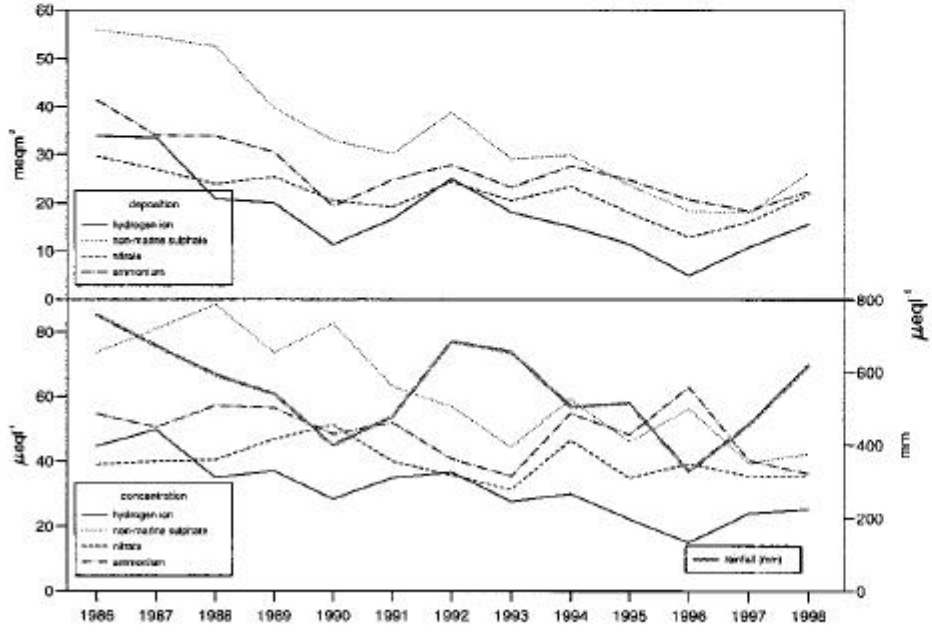
start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.3	165.5	70.8	85.7	421.1	113.1	99.1	492.6	15.2	< 9.7	114.8	95.0	4.7	2.2
14/01/98	4.9	54.0	23.5	29.1	218.9	65.5	34.2	239.0	7.0	< 9.7	27.7	50.0	12.0	10.8
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
05/02/98	5.3	68.5	57.4	69.2	83.7	18.3	41.5	83.7	7.3	< 9.7	58.4	-	5.0	2.0
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
25/02/98	5.5	69.7	27.5	67.3	56.6	23.6	62.0	62.9	2.2	< 9.7	62.9	25.0	3.1	10.0
04/03/98	5.0	36.4	26.0	30.0	68.7	24.2	18.5	78.6	2.2	< 9.7	28.2	26.0	11.2	21.5
11/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/03/98	5.3	150.2	75.9	196.7	56.8	25.4	84.8	56.8	4.1	< 9.7	143.3	-	5.0	2.7
27/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
02/04/98	4.7	59.6	48.0	61.9	76.7	27.6	19.9	94.6	5.4	< 9.7	50.4	30.0	22.4	21.5
08/04/98	4.2	57.5	64.2	39.3	33.5	9.2	9.5	41.1	< 1.3	< 9.7	53.4	47.0	58.9	29.1
15/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
06/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/05/98	4.8	80.3	68.5	105.6	37.2	17.3	48.4	41.0	3.0	< 9.7	75.9	34.0	16.2	10.7
28/05/98	4.8	38.9	23.6	40.0	13.2	7.0	23.1	16.2	2.4	< 9.7	37.3	18.0	15.1	14.6
02/06/98	4.6	38.9	27.5	27.9	26.8	9.2	11.8	29.5	1.9	< 9.7	35.6	24.0	27.5	49.0
17/06/98	4.3	48.3	38.3	15.0	10.7	7.0	25.0	16.1	6.2	< 9.7	47.1	27.0	44.7	10.1
24/06/98	4.7	34.8	32.9	28.6	22.0	7.4	13.6	25.6	2.6	< 9.7	32.2	21.0	21.4	25.3
01/07/98	5.0	82.8	49.5	66.7	32.6	14.1	52.1	27.8	6.4	< 9.7	78.9	28.0	10.0	7.9
15/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
24/07/98	6.1	66.4	56.8	94.9	22.6	22.2	157.1	29.9	24.7	< 9.7	63.7	28.0	.7	8.1
31/07/98	4.9	40.1	59.0	51.8	11.6	7.4	43.7	14.8	2.9	< 9.7	38.7	20.0	12.6	3.9
07/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13/08/98	6.0	35.4	28.1	< 2.1	10.8	7.6	91.1	15.8	14.7	< 9.7	34.1	14.0	.9	5.4
19/08/98	5.8	29.5	18.1	33.8	13.7	10.9	55.7	19.2	2.9	< 9.7	27.9	12.0	1.6	14.0
26/08/98	4.1	223.9	170.2	172.1	91.1	29.5	108.4	86.8	13.5	< 9.7	212.9	85.0	74.1	2.5
02/09/98	6.0	111.0	51.3	235.3	31.1	61.5	59.6	36.9	20.4	228.3	107.2	43.0	1.1	29.2
11/09/98	5.0	46.5	30.1	41.9	89.6	30.2	36.3	105.5	4.5	< 9.7	35.7	30.0	10.0	4.7
16/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/09/98	4.7	44.4	44.5	54.5	23.3	8.0	17.8	25.8	2.3	< 9.7	41.5	25.0	18.6	23.5
30/09/98	4.0	98.8	117.1	96.5	111.9	25.9	9.8	130.3	3.2	< 9.7	85.3	77.0	109.6	20.5
07/10/98	5.7	79.5	43.5	74.5	243.5	73.3	49.7	261.7	7.9	< 9.7	50.2	57.0	2.0	7.6
14/10/98	4.5	87.3	31.5	61.0	110.4	34.5	37.0	152.2	6.3	< 9.7	74.0	47.0	28.2	9.7
21/10/98	5.1	31.4	10.8	16.9	88.6	29.5	24.0	103.6	7.0	< 9.7	20.7	24.0	8.1	34.0
28/10/98	4.8	21.0	14.1	10.1	28.5	9.6	9.2	34.8	< 1.3	< 9.7	17.6	16.0	16.2	30.8
04/11/98	4.7	41.0	22.2	26.0	72.4	20.5	12.4	84.9	4.1	< 9.7	32.3	29.0	22.4	17.7
12/11/98	4.3	79.8	97.4	86.5	100.7	24.9	25.3	118.3	4.4	< 9.7	67.7	46.0	55.0	2.7
18/11/98	4.0	55.3	110.6	56.9	45.6	11.2	19.9	66.4	3.6	< 9.7	49.8	59.0	97.7	4.6
25/11/98	4.2	111.7	65.2	97.7	120.2	28.2	23.3	150.4	5.3	< 9.7	97.2	61.0	58.9	2.7
02/12/98	4.6	57.6	42.8	61.0	40.1	11.7	12.1	49.0	2.6	< 9.7	52.8	30.0	27.5	22.4
23/12/98	4.7	36.1	23.4	26.8	89.3	26.7	13.0	105.3	2.3	< 9.7	25.4	29.0	18.6	14.4
31/12/98	5.0	26.0	12.1	16.6	83.6	33.0	12.9	97.4	2.7	< 9.7	15.9	23.0	9.1	15.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5024	4.8	50.4	38.7	43.4	59.3	19.5	25.5	69.3	3.9	4.5	43.3	31.0	25.3	492.5

Woburn
1998

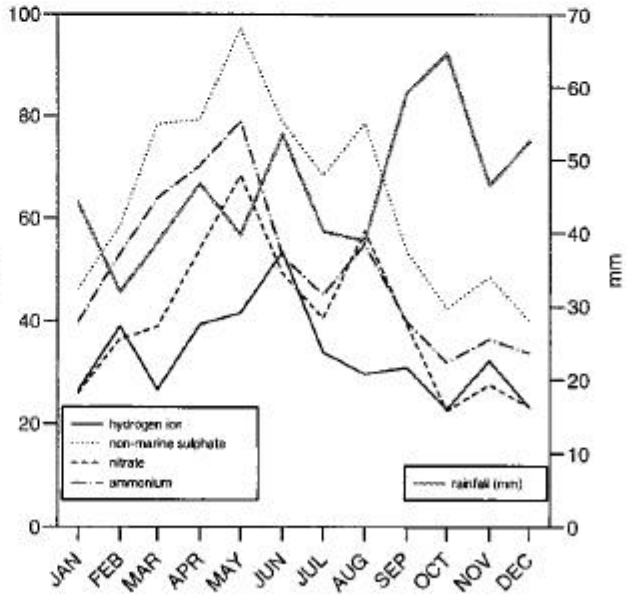
Site Code:	5127
Easting:	4964
Northing:	2361
Latitude :	52 00 52 N
Longitude:	0 35 43 W
Altitude (m):	89
Rainfall (mm):	646

Site environment:
Pasture
Other measurements:
DT, Weekly SO_2, Met
Site operator:
Rothamsted Experimental Station

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.0	42.3	27.3	31.5	134.9	44.8	31.4	149.3	2.9	< 9.7	26.0	33.0	9.8	7.3
15/01/98	5.2	28.1	23.3	24.8	65.7	27.8	26.0	73.1	1.5	< 9.7	20.2	20.0	7.1	6.5
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
28/01/98	5.3	230.6	187.9	203.9	508.8	82.0	131.3	539.8	8.1	< 9.7	169.3	-	5.0	1.0
04/02/98	5.1	46.7	44.5	54.4	84.7	20.3	41.0	86.2	1.5	< 9.7	36.5	26.0	8.5	2.5
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	5.5	77.9	57.3	46.9	95.0	18.5	102.2	91.4	5.4	< 9.7	66.4	32.0	3.1	3.9
25/02/98	6.0	49.8	19.3	49.0	67.3	29.1	70.0	74.0	2.5	< 9.7	41.7	24.0	1.0	10.7
04/03/98	4.9	35.1	16.3	23.6	58.5	20.2	16.4	66.6	1.6	< 9.7	28.1	22.0	13.2	21.3
11/03/98	4.7	206.2	180.2	129.3	127.4	31.3	35.2	200.0	3.7	< 9.7	190.9	-	20.0	1.6
18/03/98	4.9	96.1	44.9	39.5	33.8	17.8	96.5	30.9	2.8	< 9.7	92.0	30.0	11.7	4.7
25/03/98	5.2	98.4	64.7	120.1	15.4	9.5	65.0	14.2	3.4	< 9.7	96.6	21.0	5.9	3.9
01/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4
08/04/98	4.3	46.5	50.4	34.3	11.4	< 4.1	5.0	17.1	< 1.3	< 9.7	45.1	34.0	53.7	65.1
15/04/98	4.4	55.0	49.0	48.7	30.3	9.5	15.8	32.9	< 1.3	< 9.7	51.4	33.0	37.2	21.0
22/04/98	4.6	70.2	59.9	72.8	37.2	14.2	35.0	39.4	2.2	< 9.7	65.8	33.0	22.9	15.4
29/04/98	5.9	223.9	104.8	178.3	135.1	51.9	570.2	157.7	7.9	< 9.7	207.6	68.0	1.2	3.3
06/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
13/05/98	5.6	524.3	392.4	397.6	170.0	95.5	852.7	162.3	31.9	< 9.7	503.8	-	2.5	1.0
20/05/98	5.0	172.7	112.1	129.5	74.4	24.4	93.8	86.1	5.9	< 9.7	163.7	-	10.0	5.7
27/05/98	5.2	40.7	32.5	40.0	13.8	6.4	34.8	15.9	1.5	< 9.7	39.1	19.0	6.8	23.7
03/06/98	4.7	42.9	24.7	26.0	35.5	11.9	18.3	36.4	3.9	< 9.7	38.6	22.0	18.2	14.9
10/06/98	4.3	46.0	29.4	19.3	8.6	< 4.1	5.1	16.2	< 1.3	< 9.7	44.9	30.0	49.0	39.3
17/06/98	4.7	40.4	37.9	24.2	14.0	9.0	36.0	18.8	4.8	< 9.7	38.7	20.0	18.2	11.4
24/06/98	4.9	23.0	22.0	14.4	15.5	8.2	20.6	20.0	2.5	< 9.7	21.1	13.0	11.5	11.7
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.7
08/07/98	5.1	43.3	19.1	27.3	14.2	8.9	44.0	19.5	2.5	< 9.7	41.6	15.0	8.7	6.9
15/07/98	5.5	70.1	46.3	48.8	49.9	30.0	124.5	47.1	7.3	< 9.7	64.0	23.0	3.5	2.3
22/07/98	5.0	62.2	54.5	50.0	32.5	13.2	59.5	29.1	5.5	< 9.7	58.3	26.0	11.0	5.0
29/07/98	6.0	24.1	17.8	37.2	11.8	17.8	105.8	26.8	1.9	< 9.7	22.7	10.0	1.0	12.6
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/98	6.6	30.4	41.2	62.4	18.3	23.6	184.5	22.3	8.3	< 9.7	28.2	19.0	.3	2.7
19/08/98	5.9	25.7	11.6	24.1	10.2	9.8	49.8	14.8	1.8	< 9.7	24.5	< 10.0	1.3	16.0
26/08/98	4.3	250.0	157.7	142.3	75.2	31.4	177.1	64.9	12.9	< 9.7	241.0	77.0	49.0	2.3
02/09/98	4.3	43.7	61.5	44.5	9.5	< 4.1	14.6	15.6	1.4	< 9.7	42.6	32.0	44.7	23.2
09/09/98	4.9	18.1	9.3	9.3	28.6	12.8	12.5	31.9	< 1.3	< 9.7	14.6	13.0	11.5	25.9
16/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
23/09/98	4.6	50.2	73.9	86.2	3.9	< 4.1	21.6	10.2	1.3	< 9.7	49.7	30.0	23.4	34.6
30/09/98	4.3	66.2	62.5	65.0	72.4	18.2	11.1	78.0	2.4	< 9.7	57.5	44.0	51.3	17.7
07/10/98	5.1	88.8	37.8	57.5	126.3	38.2	76.1	144.1	5.4	< 9.7	73.6	37.0	8.3	4.2
14/10/98	5.1	19.0	10.8	16.4	24.0	10.5	12.2	27.2	< 1.3	< 9.7	16.1	12.0	8.3	16.3
21/10/98	5.1	22.3	5.7	11.2	51.4	19.8	11.9	58.4	1.4	< 9.7	16.1	16.0	7.6	42.6
28/10/98	4.8	19.6	14.7	9.4	35.1	10.7	4.7	39.3	2.1	< 9.7	15.4	17.0	16.6	34.1
04/11/98	4.9	30.2	16.5	20.8	59.1	19.8	14.4	71.6	2.1	< 9.7	23.1	16.0	11.7	7.3
11/11/98	4.0	125.7	14.6	16.6	35.5	9.2	6.8	40.1	1.5	< 9.7	121.4	59.0	107.2	17.6
18/11/98	4.4	37.6	52.0	37.8	34.6	5.2	14.1	38.6	< 1.3	< 9.7	33.4	31.0	36.3	10.5
25/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8
02/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
09/12/98	5.0	36.6	29.8	44.1	55.1	19.6	17.7	63.5	1.9	< 9.7	30.0	23.0	9.5	7.9
16/12/98	5.0	28.2	21.6	26.1	52.3	20.0	16.1	58.5	1.4	< 9.7	21.9	18.0	10.5	9.1
23/12/98	5.0	20.7	7.5	12.8	47.8	21.0	10.0	52.6	< 1.3	< 9.7	15.0	15.0	9.5	19.8
30/12/98	4.8	31.6	22.8	23.3	90.9	28.2	10.2	103.2	2.0	< 9.7	20.6	29.0	17.8	15.8
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5127	4.8	46.4	35.1	36.2	35.6	12.7	27.9	41.4	1.8	< 9.7	42.1	25.5	25.1	619.7

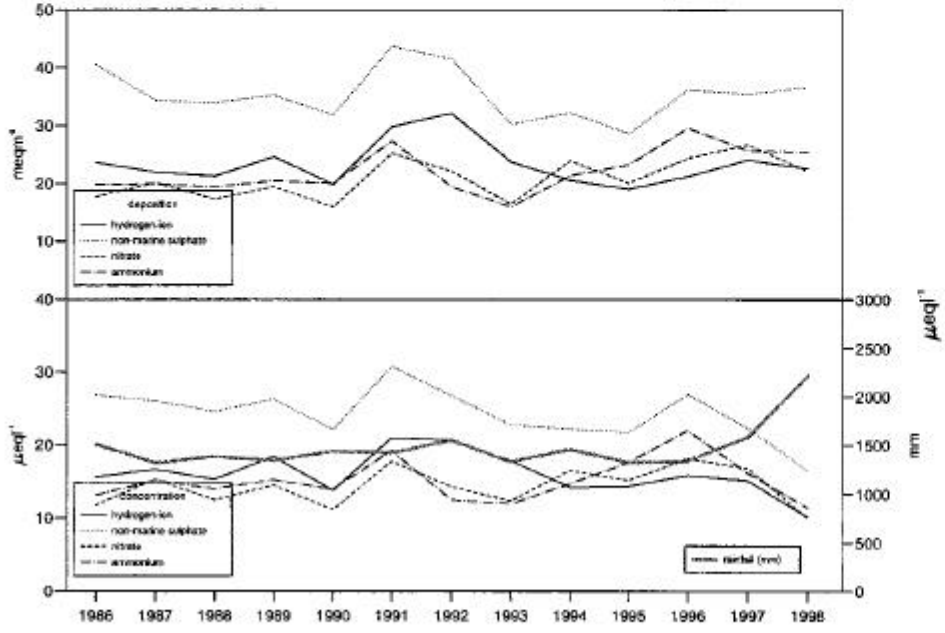
Tycanol Wood

1998

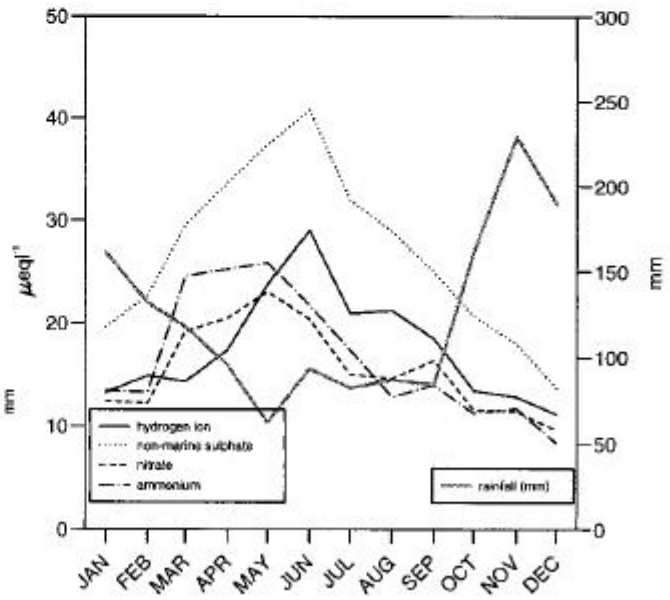
Site Code:	5123
Easting:	2093
Northing:	2364
Latitude :	51 59 34 N
Longitude:	4 46 41 W
Altitude (m):	205
Rainfall (mm):	1847

Site environment:
Open moorland
Other measurements:
DT
Site operator:
Countryside Council for Wales

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.2	67.6	21.6	15.8	348.8	102.9	48.7	392.7	7.0	< 9.7	25.6	69.0	6.0	44.4
14/01/98	5.0	23.8	16.3	5.6	121.1	46.3	15.0	140.2	2.1	< 9.7	9.2	27.0	9.8	56.3
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/02/98	4.6	59.5	20.5	24.0	173.2	48.5	14.9	184.5	3.0	< 9.7	38.7	46.0	24.0	16.3
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
18/02/98	5.5	70.3	46.5	53.7	220.7	69.0	56.6	244.1	6.2	< 9.7	43.7	49.0	2.9	9.1
25/02/98	5.3	19.5	3.6	6.3	49.4	26.1	35.1	52.7	< 1.3	< 9.7	13.5	13.0	4.5	74.6
04/03/98	5.4	19.8	5.1	6.0	101.6	49.0	21.0	115.0	1.9	< 9.7	7.6	22.0	4.3	57.2
11/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/03/98	5.1	28.3	10.5	22.3	20.6	13.2	24.9	24.1	< 1.3	< 9.7	25.8	12.0	7.4	11.8
25/03/98	5.1	42.0	28.8	39.5	60.3	29.3	30.5	58.8	1.4	< 9.7	34.8	23.0	8.5	23.1
01/04/98	5.2	40.9	8.5	9.5	229.0	78.8	24.0	256.1	4.7	< 9.7	13.3	35.0	6.9	67.4
08/04/98	4.8	60.9	28.2	28.1	215.3	61.0	20.3	241.4	4.6	< 9.7	35.0	56.0	17.0	32.2
15/04/98	4.9	32.4	16.1	22.5	64.8	25.7	13.2	68.0	1.3	< 9.7	24.6	21.0	11.7	54.2
22/04/98	6.3	46.0	6.7	77.1	91.3	58.1	64.8	107.2	7.1	27.3	35.0	36.0	.5	38.9
29/04/98	6.2	98.3	78.3	100.6	256.9	94.7	113.0	273.3	6.2	< 9.7	67.3	63.0	.6	5.1
06/05/98	5.7	133.6	71.7	115.9	264.4	90.9	116.6	281.5	7.3	< 9.7	101.7	66.0	1.9	5.9
13/05/98	4.3	126.2	92.2	104.1	8.2	6.4	51.1	14.8	1.7	< 9.7	125.2	50.0	45.7	4.8
20/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
27/05/98	4.8	43.0	30.9	27.4	28.3	8.9	13.9	30.0	< 1.3	< 9.7	39.6	27.0	17.4	21.9
03/06/98	4.7	34.9	27.7	25.3	51.9	19.2	11.4	57.9	< 1.3	< 9.7	28.7	26.0	21.4	45.1
10/06/98	4.7	31.5	< 2.1	< 2.1	65.7	18.9	6.0	76.6	3.0	< 9.7	23.6	22.0	21.9	32.1
17/06/98	4.7	30.8	12.6	8.6	23.1	6.3	12.9	27.0	< 1.3	< 9.7	28.0	17.0	20.0	50.6
24/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0
08/07/98	5.0	31.9	6.1	15.2	79.4	27.2	11.8	92.9	1.7	< 9.7	22.3	22.0	9.5	18.6
15/07/98	4.7	32.3	10.3	11.8	54.2	15.3	6.0	59.1	1.5	< 9.7	25.7	22.0	21.9	42.6
22/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7
29/07/98	5.0	22.0	9.7	16.3	27.2	10.5	8.4	34.0	< 1.3	< 9.7	18.7	12.0	9.8	20.4
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/98	5.2	20.5	8.1	15.1	39.8	21.2	16.4	44.5	< 1.3	< 9.7	15.7	13.0	6.2	18.4
19/08/98	5.3	22.3	6.6	15.3	61.5	27.0	20.4	69.3	1.5	< 9.7	14.9	16.0	5.1	20.9
26/08/98	4.6	77.5	71.5	54.7	79.6	25.2	50.0	72.8	6.8	< 9.7	67.9	35.0	24.0	5.4
01/09/98	5.0	32.8	7.6	8.5	127.0	42.7	13.2	145.3	2.7	< 9.7	17.5	29.0	11.2	73.0
09/09/98	5.3	37.7	6.4	11.2	227.6	78.3	24.8	248.0	4.7	< 9.7	10.3	43.0	4.7	25.6
16/09/98	4.6	43.8	14.6	14.4	39.9	16.6	20.6	43.9	1.8	< 9.7	39.0	21.0	26.3	4.6
24/09/98	4.8	51.0	61.7	71.6	6.1	7.5	41.5	10.8	5.2	10.9	50.3	23.0	14.5	9.3
29/09/98	4.4	34.3	43.5	31.6	24.5	6.7	6.7	27.6	< 1.3	< 9.7	31.4	24.0	36.3	6.5
06/10/98	5.6	27.8	12.0	18.2	107.7	40.1	25.2	122.4	2.6	< 9.7	14.8	23.0	2.6	7.2
13/10/98	5.1	20.8	4.1	6.4	71.5	26.6	9.3	82.0	1.5	< 9.7	12.2	18.0	8.7	42.4
20/10/98	5.0	30.5	< 2.1	2.7	187.4	58.2	15.1	212.8	3.8	< 9.7	7.9	36.0	9.8	148.4
28/10/98	4.9	36.7	9.1	6.1	222.2	62.6	15.7	241.5	4.3	< 9.7	10.0	44.0	12.6	59.1
03/11/98	5.0	33.3	6.7	7.6	179.6	55.7	13.2	209.5	4.2	< 9.7	11.6	37.0	8.9	52.9
10/11/98	5.3	48.0	7.1	10.5	316.0	89.1	23.7	339.5	6.3	< 9.7	9.9	47.0	5.1	10.3
17/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/11/98	5.0	39.1	9.3	16.3	140.5	42.0	17.3	159.5	3.1	< 9.7	22.2	29.0	9.3	10.0
01/12/98	4.9	22.3	9.8	11.3	45.3	18.4	9.2	48.5	1.6	< 9.7	16.9	16.0	13.5	27.4
08/12/98	4.8	37.6	10.6	11.2	142.0	42.6	11.2	158.2	2.6	< 9.7	20.4	34.0	16.2	46.1
15/12/98	5.0	60.1	25.9	20.7	238.8	68.6	29.9	248.2	5.1	< 9.7	31.4	44.0	9.8	6.0
22/12/98	5.1	42.6	6.4	7.9	275.3	86.5	22.7	305.8	5.0	< 9.7	9.4	53.0	7.2	84.2
30/12/98	5.1	38.5	5.1	6.6	227.4	70.9	19.1	249.4	4.3	< 9.7	11.1	49.0	8.3	95.6
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5123	5.0	35.6	11.2	12.4	145.1	47.7	19.2	161.8	3.0	< 8.6	18.1	32.8	11.0	1504.7

NOTE - In Issue 1 of the report, the sample collected 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 but the data in the Site Details has not neen amended. The annual-mean precipitation weighted concentrations are unaffected as this sample had been excluded from the calculations.

Llyn Brianne

1998

Site Code:	5124
Easting:	2807
Northing:	2492
Latitude :	52 07 32 N
Longitude:	3 44 34 W
Altitude (m):	372
Rainfall (mm):	1774

Site environment:

Open moorland,upland hill farming

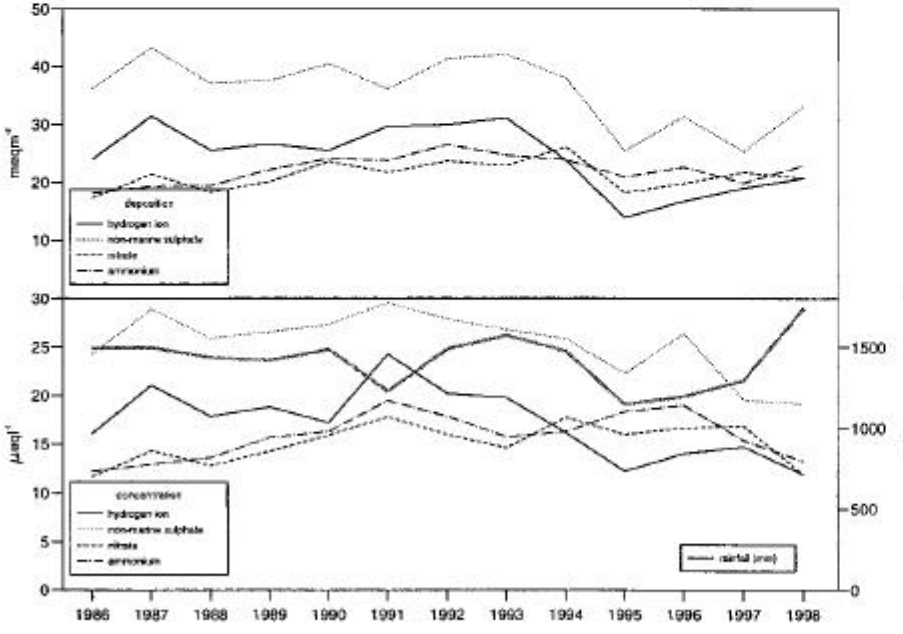
Other measurements:

DT, UKAWMN, Met

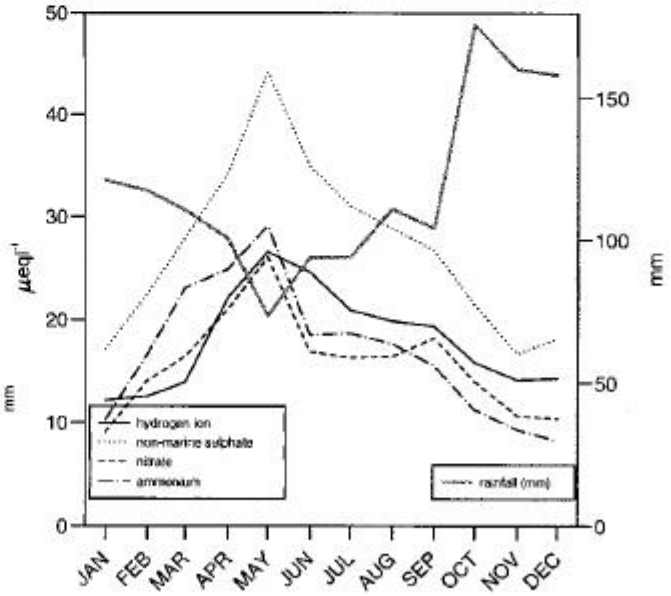
Site operator:

Environment Agency

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeq l⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
15/01/98	6.5	22.6	7.2	8.3	90.5	34.2	92.8	102.8	< 1.3	< 9.7	11.7	22.0	.3	56.2
22/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
04/02/98	5.0	44.4	23.1	33.4	102.3	37.0	14.3	113.2	1.9	< 9.7	32.1	29.0	8.9	19.6
10/02/98	4.7	257.3	213.7	261.9	260.1	67.9	107.3	226.9	11.3	< 9.7	226.0	95.0	19.5	2.5
19/02/98	5.3	32.8	14.4	17.7	105.8	42.3	32.3	118.8	4.5	< 9.7	20.1	26.0	5.5	18.8
25/02/98	5.3	15.0	3.9	7.6	40.4	25.1	19.9	44.3	< 1.3	< 9.7	10.2	11.0	4.8	84.6
04/03/98	5.4	17.5	4.5	6.7	72.6	36.0	16.4	80.3	1.6	< 9.7	8.8	15.0	4.4	83.7
11/03/98	5.3	61.3	21.7	43.9	239.3	81.8	46.1	268.7	5.9	< 9.7	32.4	52.0	4.5	5.9
19/03/98	5.0	32.3	18.1	32.9	13.7	12.6	21.1	15.9	< 1.3	< 9.7	30.6	13.0	9.1	40.4
01/04/98	4.7	31.7	16.1	16.6	58.6	23.0	9.4	67.9	1.5	< 9.7	24.6	18.0	18.6	76.6
08/04/98	4.3	52.9	45.3	33.3	24.6	6.5	4.6	30.5	< 1.3	< 9.7	49.9	40.0	45.7	34.9
17/04/98	4.8	31.4	15.6	17.6	42.0	18.0	16.4	46.1	1.9	< 9.7	26.3	19.0	17.0	12.2
21/04/98	4.7	34.9	12.1	11.8	59.2	20.8	8.8	65.7	< 1.3	< 9.7	27.7	24.0	18.6	53.4
29/04/98	5.0	56.2	34.4	55.1	62.5	25.7	32.4	69.1	1.7	< 9.7	48.7	29.0	11.0	16.3
06/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.7
15/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/05/98	5.1	37.4	20.1	42.8	21.0	14.1	36.0	23.6	< 1.3	< 9.7	34.8	16.0	8.3	15.3
27/05/98	4.8	24.5	21.8	17.9	12.1	6.8	14.9	14.5	< 1.3	< 9.7	23.0	15.0	15.5	27.6
02/06/98	5.0	24.3	12.3	12.5	54.7	27.4	14.6	59.2	2.6	< 9.7	17.7	18.0	11.0	56.5
11/06/98	4.7	22.9	13.3	7.9	19.6	6.5	5.0	21.2	< 1.3	< 9.7	20.5	15.0	18.2	27.3
18/06/98	4.8	27.6	12.3	8.8	22.0	7.1	12.8	25.7	< 1.3	< 9.7	25.0	15.0	17.4	31.3
24/06/98	5.0	15.2	4.1	2.9	29.0	11.1	5.0	32.4	< 1.3	< 9.7	11.7	11.0	9.8	52.3
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
08/07/98	4.7	31.2	6.3	10.8	52.4	15.6	6.3	58.3	1.5	< 9.7	24.9	20.0	19.5	84.4
22/07/98	4.7	32.3	11.0	11.6	65.1	19.0	10.1	70.6	1.9	< 9.7	24.4	22.0	19.1	22.0
29/07/98	4.8	29.4	16.3	19.0	28.3	10.4	6.9	31.8	< 1.3	< 9.7	26.0	17.0	15.8	25.9
03/08/98	5.1	51.8	25.1	13.2	60.9	19.3	29.2	53.2	< 1.3	< 9.7	44.5	20.0	8.7	5.5
12/08/98	5.1	24.1	8.8	9.7	34.7	14.7	16.3	35.9	3.5	< 9.7	20.0	13.0	7.6	19.3
19/08/98	5.2	19.0	6.3	14.4	29.0	17.0	10.6	32.1	< 1.3	< 9.7	15.5	11.0	6.2	42.7
26/08/98	5.3	97.2	87.1	78.2	34.6	15.9	68.1	29.6	6.7	< 9.7	93.0	-	5.0	2.2
03/09/98	4.9	20.1	8.1	6.7	43.9	17.1	8.1	48.7	< 1.3	< 9.7	14.8	16.0	13.2	66.4
09/09/98	5.2	22.0	5.8	5.9	94.8	38.4	12.8	110.4	2.2	< 9.7	10.5	22.0	7.1	70.4
18/09/98	5.1	15.2	6.4	6.8	8.1	6.7	24.9	10.8	< 1.3	< 9.7	14.2	< 10.0	8.5	3.5
23/09/98	4.3	59.4	81.3	76.2	8.6	< 4.1	8.8	12.5	< 1.3	< 9.7	58.4	39.0	47.9	37.2
01/10/98	4.0	168.5	122.4	113.4	124.1	29.9	22.8	121.5	4.1	< 9.7	153.6	86.0	109.6	3.4
14/10/98	5.1	23.7	5.1	6.2	87.0	28.6	8.6	99.3	1.8	< 9.7	13.2	22.0	8.7	82.0
21/10/98	5.3	37.2	< 2.1	2.7	253.2	76.6	19.9	280.9	5.2	< 9.7	6.7	46.0	4.5	175.7
30/10/98	4.8	22.1	10.9	4.5	75.3	22.6	7.8	85.4	1.7	< 9.7	13.1	22.0	15.8	46.9
04/11/98	5.0	26.0	5.4	7.4	109.8	36.5	11.1	125.8	2.3	< 9.7	12.7	21.0	9.8	57.9
12/11/98	5.1	41.1	8.6	8.7	253.6	74.2	24.0	278.4	5.7	< 9.7	10.6	41.0	8.1	14.2
18/11/98	4.8	31.6	23.8	20.0	70.2	21.0	9.5	76.5	2.0	< 9.7	23.1	24.0	17.8	27.6
27/11/98	5.3	21.3	6.5	8.6	75.8	29.6	14.2	81.1	1.5	< 9.7	12.1	18.0	5.5	22.4
02/12/98	4.7	31.2	16.3	11.2	62.2	17.9	8.8	66.8	1.7	< 9.7	23.7	20.0	19.5	6.7
09/12/98	4.8	32.1	9.8	11.0	84.0	26.3	8.8	95.6	2.0	< 9.7	21.9	25.0	15.5	27.1
16/12/98	5.0	37.8	15.2	16.3	134.7	43.3	17.9	155.2	2.8	< 9.7	21.6	30.0	11.0	30.7
22/12/98	5.1	31.6	5.1	7.4	167.3	58.4	16.2	193.5	4.2	< 9.7	11.4	33.0	7.9	72.6
30/12/98	5.1	37.9	10.2	8.7	155.6	55.2	36.7	177.5	3.6	< 9.7	19.2	33.0	7.6	74.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5124	5.0	30.0	11.9	13.2	90.0	31.9	17.3	101.0	2.1	< 9.7	19.1	24.0	11.9	1737.0

Pumlumon

1998

Site Code:	5150
Easting:	2823
Northing:	2854
Latitude :	52 27 13 N
Longitude:	3 43 56 W
Altitude (m):	390
Rainfall (mm):	2182

Site environment:

Open moorland, upland hill farming

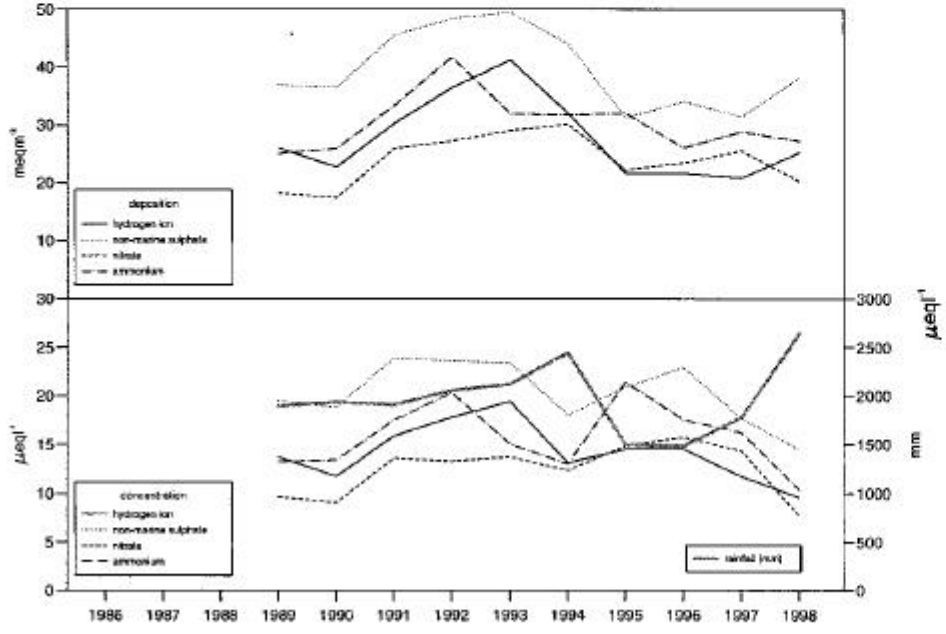
Other measurements:

DT, UKAWMN

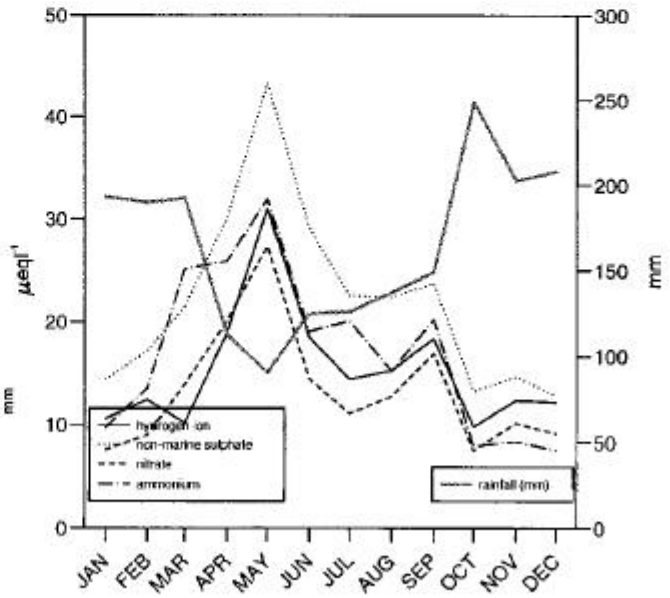
Site operator:

Institute of Hydrology

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	5.0	31.2	8.9	10.0	154.6	53.7	19.3	168.7	2.9	< 9.7	12.6	31.0	9.1	63.4
13/01/98	5.0	24.6	3.8	< 2.1	125.0	43.0	11.6	146.7	2.2	< 9.7	9.5	27.0	9.5	105.9
20/01/98	5.3	82.8	43.0	23.0	44.5	10.6	20.0	51.4	1.9	< 9.7	77.4	-	5.0	2.7
27/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
03/02/98	4.9	38.9	14.8	21.9	84.4	28.2	9.3	94.4	< 1.3	< 9.7	28.7	26.0	13.2	32.2
10/02/98	5.7	33.8	21.9	28.8	44.8	17.9	48.7	43.3	< 1.3	< 9.7	28.4	14.0	2.0	7.4
17/02/98	5.4	30.8	12.1	20.2	91.0	40.2	24.7	107.0	2.1	< 9.7	19.8	23.0	4.1	20.9
24/02/98	5.7	15.5	2.4	7.9	56.9	36.2	27.9	62.1	4.4	< 9.7	8.6	13.0	2.2	104.8
03/03/98	5.4	11.7	3.0	4.9	38.5	25.3	12.5	42.3	< 1.3	< 9.7	7.0	< 10.0	4.1	183.3
10/03/98	5.3	55.1	11.0	22.0	286.3	94.1	38.1	314.9	5.3	< 9.7	20.6	55.0	5.2	15.2
17/03/98	5.3	81.7	87.6	47.5	76.6	22.5	47.8	70.9	2.8	< 9.7	72.5	-	5.0	2.0
24/03/98	5.1	15.2	4.1	11.5	4.0	6.3	8.7	9.8	< 1.3	< 9.7	14.7	< 10.0	7.8	84.9
31/03/98	6.0	39.7	18.0	100.1	45.7	69.5	39.8	55.5	10.6	31.4	34.2	19.0	1.0	56.7
07/04/98	4.2	65.3	54.9	46.9	40.4	10.9	7.4	46.8	1.3	< 9.7	60.4	35.0	63.1	24.3
14/04/98	-	-	-	-	-	-	-	-	-	-	-	.0	-	31.8
21/04/98	4.9	26.2	8.7	9.4	59.2	25.9	9.1	68.1	< 1.3	< 9.7	19.1	20.0	13.2	41.8
28/04/98	7.5	208.0	54.9	1441.3	224.0	120.9	78.1	149.2	273.0	427.5	181.1	257.0	.0	13.4
05/05/98	4.8	65.0	25.2	49.3	71.3	28.2	32.2	80.6	1.7	< 9.7	56.4	32.0	17.0	38.9
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	4.5	44.1	26.9	35.7	10.1	5.3	13.8	13.5	< 1.3	< 9.7	42.9	22.0	28.8	42.2
02/06/98	4.9	19.8	14.0	13.8	14.9	8.9	15.7	17.8	< 1.3	< 9.7	18.0	13.0	13.8	51.1
09/06/98	4.9	22.1	8.8	5.6	55.6	18.0	5.0	59.9	< 1.3	< 9.7	15.4	18.0	13.2	49.0
16/06/98	5.0	15.8	5.0	5.9	11.7	4.9	15.3	15.4	< 1.3	< 9.7	14.4	< 10.0	9.8	103.6
23/06/98	5.2	17.7	4.9	4.2	29.1	10.5	4.7	33.0	< 1.3	< 9.7	14.2	23.0	6.5	86.8
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/07/98	5.2	17.8	5.6	10.8	30.0	13.2	10.9	33.9	1.3	< 9.7	14.2	10.0	5.6	78.8
14/07/98	4.8	34.7	10.5	18.8	63.1	19.4	10.4	68.8	1.9	< 9.7	27.1	22.0	14.5	29.9
21/07/98	4.9	29.2	7.7	15.6	75.3	24.9	8.7	85.2	1.8	< 9.7	20.1	21.0	12.0	41.8
28/07/98	5.0	19.2	6.6	11.5	30.6	12.3	6.0	34.5	< 1.3	< 9.7	15.5	12.0	11.2	74.7
04/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	6.3	40.3	5.6	94.5	40.8	99.2	61.8	36.8	12.7	58.4	35.4	21.0	.5	45.3
18/08/98	5.4	11.6	2.9	6.1	26.5	18.8	9.8	29.4	< 1.3	< 9.7	8.4	< 10.0	4.4	92.5
25/08/98	4.6	43.8	24.8	33.0	11.4	5.4	20.9	15.3	< 1.3	< 9.7	42.4	20.0	22.9	17.3
01/09/98	5.2	17.8	9.6	11.9	30.9	19.1	11.9	35.2	< 1.3	< 9.7	14.1	11.0	6.9	38.1
08/09/98	5.3	16.4	2.7	3.4	83.3	38.3	14.2	96.8	1.8	< 9.7	6.4	18.0	5.5	137.8
15/09/98	4.9	27.5	7.6	14.0	30.1	11.9	9.2	33.5	< 1.3	< 9.7	23.9	15.0	11.7	19.6
22/09/98	4.2	62.0	86.7	78.5	3.6	< 4.1	17.7	11.3	< 1.3	< 9.7	61.6	44.0	69.2	13.3
29/09/98	4.2	83.0	76.5	88.2	24.3	6.2	6.1	27.2	< 1.3	< 9.7	80.0	48.0	58.9	16.6
06/10/98	5.3	20.7	6.8	13.3	57.8	26.3	10.7	64.2	1.4	< 9.7	13.7	15.0	5.0	45.5
13/10/98	5.5	14.0	< 2.1	5.8	70.9	32.2	10.5	79.2	1.4	< 9.7	5.5	15.0	3.2	106.9
20/10/98	5.2	46.8	< 2.1	3.1	345.0	99.3	25.3	382.9	7.0	< 9.7	5.2	62.0	6.5	199.2
27/10/98	5.2	26.0	3.2	3.9	148.2	50.0	13.9	171.4	3.5	< 9.7	8.1	30.0	6.8	125.7
03/11/98	5.0	34.8	5.5	7.5	178.7	56.0	17.1	206.3	4.3	< 9.7	13.3	32.0	10.0	37.6
10/11/98	5.3	43.2	5.1	7.7	298.3	86.7	23.6	319.4	5.8	< 9.7	7.2	46.0	5.1	36.0
17/11/98	4.7	20.1	22.8	16.7	24.1	8.0	5.3	25.7	< 1.3	< 9.7	17.2	17.0	21.4	20.2
24/11/98	5.1	28.8	8.7	12.3	91.4	31.9	9.5	100.3	1.9	< 9.7	17.7	23.0	8.7	35.5
01/12/98	5.1	13.6	8.7	6.4	26.7	14.9	10.3	28.0	< 1.3	< 9.7	10.4	10.0	8.1	23.8
08/12/98	5.0	21.2	4.8	7.9	50.8	20.1	7.3	57.9	< 1.3	< 9.7	15.1	16.0	9.3	44.3
15/12/98	5.0	28.1	5.9	7.1	125.5	44.7	13.5	148.0	2.5	< 9.7	13.0	26.0	9.1	56.7
22/12/98	5.1	27.6	4.4	5.4	159.6	57.9	15.4	186.1	2.7	< 9.7	8.3	33.0	8.1	141.2
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5150	5.1	25.7	7.4	10.1	95.1	34.8	14.3	107.6	2.1	< 5.4	14.2	22.1	9.3	2640.8

Stoke Ferry

1998

Site Code:	5004
Easting:	5700
Northing:	2988
Latitude :	52 33 36 N
Longitude:	0 30 29 E
Altitude (m):	15
Rainfall (mm):	629

Site environment:

Grassed land at water treatment works

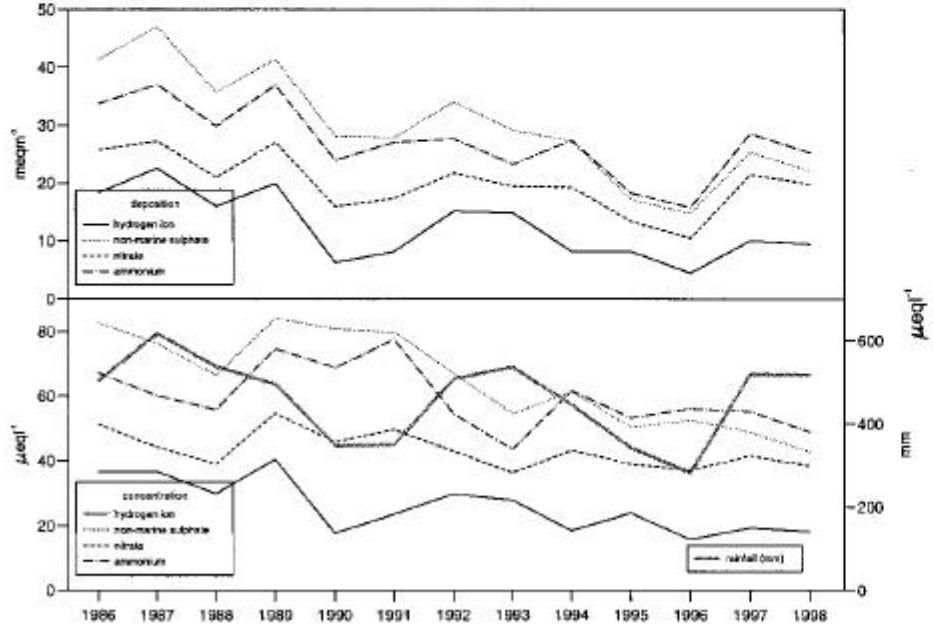
Other measurements:

DT, Daily SO_2, WF, EMEP

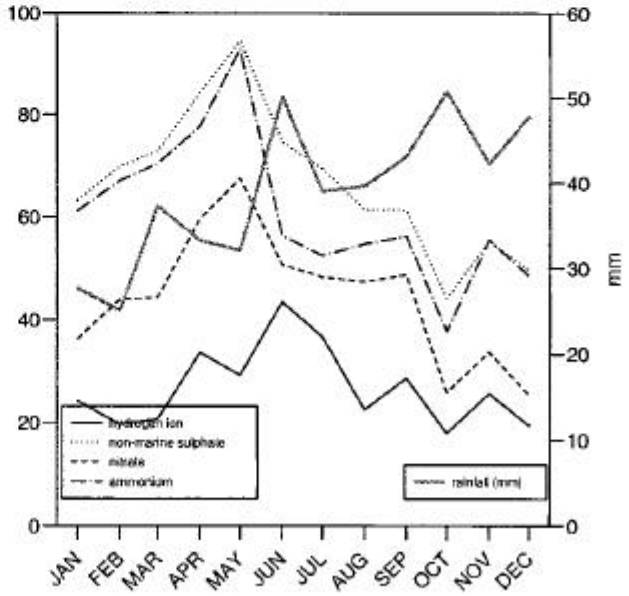
Site operator:

Kings Lynn and West Norfolk BC

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	4.7	77.2	44.3	62.4	136.7	38.1	36.1	148.0	2.9	< 9.7	60.8	44.0	22.4	6.2
13/01/98	5.2	42.4	18.7	28.6	155.3	55.3	29.8	178.7	2.9	< 9.7	23.6	37.0	6.6	17.5
20/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
10/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17/02/98	5.6	173.8	69.5	149.0	98.0	30.3	198.5	118.6	6.9	< 9.7	162.0	-	2.5	1.2
24/02/98	6.2	58.9	25.1	72.7	65.7	27.4	82.6	70.4	2.3	< 9.7	51.0	26.0	.7	12.7
03/03/98	5.1	28.1	18.0	29.9	19.3	11.2	20.4	22.4	< 1.3	< 9.7	25.8	14.0	7.8	28.8
10/03/98	4.9	57.6	41.7	57.4	109.9	33.1	32.9	127.4	2.9	< 9.7	44.3	34.0	11.5	5.6
17/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/03/98	6.3	34.5	20.4	64.3	5.2	7.7	71.9	9.6	< 1.3	< 9.7	33.9	13.0	.5	10.1
31/03/98	5.0	62.5	59.3	83.1	88.6	32.2	38.2	103.4	2.6	< 9.7	51.8	36.0	11.0	9.5
07/04/98	4.2	48.6	58.0	44.4	34.6	8.6	5.0	38.4	< 1.3	< 9.7	44.4	33.0	58.9	51.3
14/04/98	4.4	48.3	57.6	46.2	36.5	10.0	10.8	38.0	1.3	< 9.7	44.0	36.0	40.7	22.4
21/04/98	5.0	49.2	42.2	60.4	30.1	14.6	48.2	32.2	1.5	< 9.7	45.6	24.0	9.1	15.4
28/04/98	4.2	236.6	139.0	163.5	570.5	133.2	73.0	649.2	15.7	< 9.7	167.8	149.0	63.1	3.5
05/05/98	5.0	199.4	119.0	170.9	225.9	66.8	510.8	230.1	9.4	< 9.7	172.2	-	10.0	.6
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	5.3	226.0	186.4	192.6	69.8	30.9	171.4	73.6	10.6	< 9.7	217.5	-	5.0	1.1
26/05/98	5.8	70.5	57.7	102.1	38.5	20.5	104.6	40.1	4.4	< 9.7	65.9	29.0	1.6	7.3
02/06/98	4.8	59.0	72.1	82.7	21.7	6.6	21.6	23.9	2.2	< 9.7	56.4	35.0	15.1	22.3
09/06/98	4.5	56.6	34.0	31.4	84.5	21.3	19.9	88.4	3.9	< 9.7	46.4	36.0	30.2	12.0
16/06/98	5.5	51.7	28.6	61.5	17.7	13.4	59.8	19.0	4.3	< 9.7	49.5	19.0	2.9	21.1
23/06/98	5.2	37.0	44.7	40.8	34.5	13.7	49.1	36.4	5.7	< 9.7	32.8	20.0	6.0	5.6
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
07/07/98	7.2	96.4	60.2	851.3	65.5	79.1	224.1	84.8	1153.4	93.4	88.6	206.0	.1	4.3
14/07/98	6.3	76.2	42.8	94.3	21.2	20.2	139.9	27.1	6.3	< 9.7	73.6	23.0	.5	6.2
21/07/98	4.5	85.9	63.3	55.3	27.8	10.1	61.1	25.8	5.0	< 9.7	82.5	33.0	30.9	8.8
28/07/98	4.6	55.0	37.5	41.8	19.4	4.9	40.4	21.3	3.5	< 9.7	52.6	23.0	24.5	7.6
04/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	6.4	86.4	112.2	80.8	52.3	30.7	825.5	49.7	24.0	15.4	80.1	43.0	.4	2.3
18/08/98	5.6	20.1	13.0	10.7	18.5	10.2	50.9	23.8	1.5	< 9.7	17.9	10.0	2.5	21.6
25/08/98	4.8	166.0	95.4	159.3	71.6	24.0	73.7	63.9	7.0	< 9.7	157.4	53.0	17.0	6.0
01/09/98	4.4	55.4	68.8	70.4	15.7	5.8	18.7	18.4	1.9	< 9.7	53.5	33.0	37.2	22.6
08/09/98	4.8	37.7	20.5	25.3	77.6	25.7	21.7	90.7	1.8	< 9.7	28.4	26.0	14.1	16.2
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
22/09/98	5.3	404.6	440.2	459.2	226.5	75.2	656.9	187.7	18.0	< 9.7	377.3	-	5.0	1.0
29/09/98	4.5	116.2	97.6	130.5	181.6	44.0	29.1	206.4	5.3	< 9.7	94.3	69.0	28.8	7.3
06/10/98	4.5	107.5	46.4	55.1	407.5	101.1	34.9	481.7	9.1	< 9.7	58.5	93.0	33.9	7.1
13/10/98	5.4	24.2	7.1	10.0	98.2	38.9	28.5	114.1	2.5	< 9.7	12.4	22.0	3.9	16.5
20/10/98	5.5	34.4	12.4	22.6	62.4	24.5	40.0	71.0	2.3	< 9.7	26.9	19.0	2.9	12.5
27/10/98	5.2	17.2	9.4	15.0	21.1	10.0	13.7	24.8	< 1.3	< 9.7	14.7	11.0	6.9	42.7
03/11/98	4.9	37.9	19.4	24.1	69.7	22.8	21.0	84.0	3.3	< 9.7	29.5	20.0	13.2	2.7
10/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
17/11/98	4.6	100.4	77.3	142.8	61.2	17.8	31.4	77.0	3.6	< 9.7	93.0	45.0	26.3	2.9
24/11/98	4.7	59.0	40.1	61.1	64.3	19.0	21.2	74.9	3.2	< 9.7	51.2	30.0	18.6	5.3
01/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.9
08/12/98	4.8	34.0	27.2	36.1	22.4	8.8	8.4	27.2	< 1.3	< 9.7	31.3	20.0	17.8	22.2
15/12/98	4.9	35.6	27.8	39.8	37.2	14.1	15.7	42.3	1.7	< 9.7	31.1	20.0	12.6	15.4
22/12/98	5.1	30.6	15.3	29.0	53.5	22.7	11.4	61.9	1.6	< 9.7	24.1	20.0	7.8	22.9
29/12/98	5.3	27.4	18.9	29.8	62.8	27.0	20.8	69.0	1.7	< 9.7	19.9	17.0	4.8	5.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5004	5.0	49.2	38.4	48.7	55.7	19.3	32.8	63.1	2.3	< 8.7	42.5	27.5	18.4	516.7

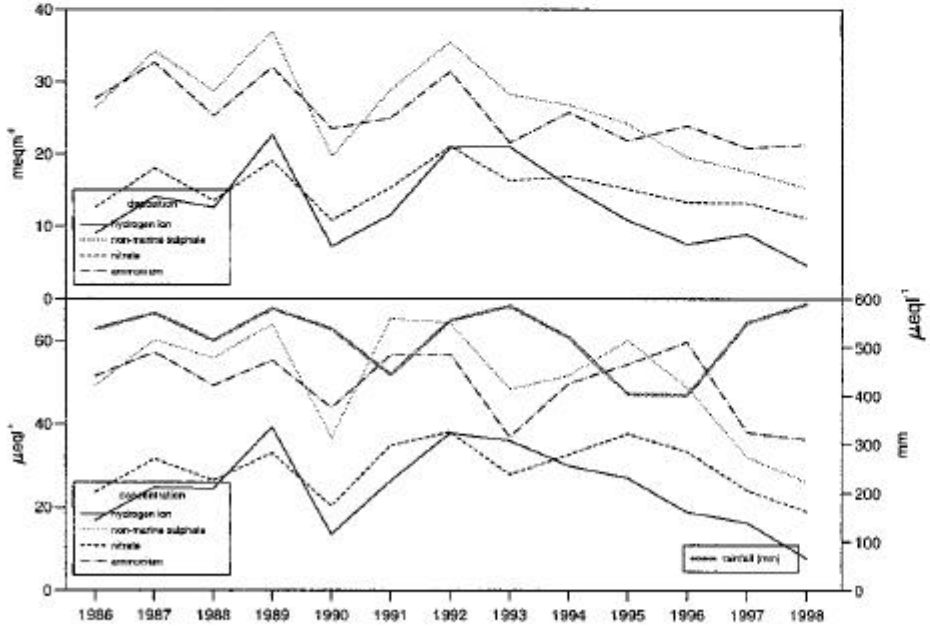
Preston Montford

1998

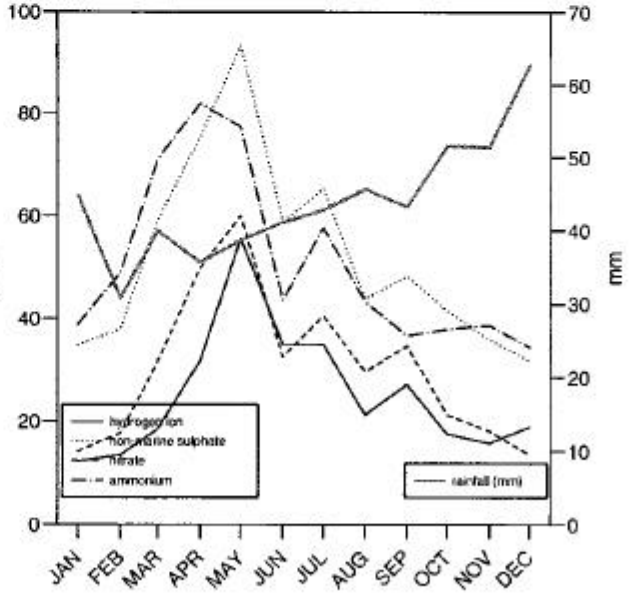
Site Code:	5023
Easting:	3432
Northing:	3143
Latitude :	52 43 23 N
Longitude:	2 50 17 W
Altitude (m):	70
Rainfall (mm):	695

Site environment:
Field adjacent to Study Centre
Other measurements:
DT, Weekly SO_2, Met
Site operator:
Field Studies Council

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration
in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.1	29.3	17.7	30.9	42.0	19.2	17.6	43.6	< 1.3	< 9.7	24.3	16.0	7.4	23.7
14/01/98	5.8	32.1	8.3	32.3	86.1	42.6	28.5	99.7	2.7	< 9.7	21.7	22.0	1.4	6.0
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
04/02/98	6.1	18.7	8.4	31.3	31.7	28.7	31.4	33.3	< 1.3	< 9.7	14.9	10.0	.8	5.6
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	6.2	35.8	18.6	53.7	63.5	26.3	60.8	72.5	4.1	< 9.7	28.2	20.0	.6	3.6
25/02/98	6.0	12.5	2.4	27.5	38.3	33.8	38.2	41.1	1.8	< 9.7	7.9	11.0	1.0	34.7
04/03/98	6.0	22.1	6.6	24.3	73.2	47.7	24.7	83.9	1.9	< 9.7	13.3	19.0	1.1	20.6
11/03/98	6.6	49.8	22.9	72.6	164.0	56.5	56.7	177.6	9.1	< 9.7	30.1	38.0	.3	2.0
18/03/98	6.5	24.0	14.8	56.9	10.6	12.7	70.7	15.7	< 1.3	< 9.7	22.7	13.0	.3	8.5
25/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
01/04/98	4.5	56.9	43.9	69.0	46.6	15.3	15.7	58.6	2.1	< 9.7	51.3	28.0	28.8	20.3
08/04/98	4.8	35.4	31.0	40.5	44.9	13.8	15.5	50.7	4.3	< 9.7	30.0	19.0	17.4	23.9
15/04/98	6.0	75.1	34.5	98.2	68.1	44.0	95.6	68.0	6.4	< 9.7	66.9	27.0	1.1	3.6
22/04/98	5.3	54.0	24.7	71.2	34.0	22.6	27.7	39.2	1.8	< 9.7	49.9	21.0	5.0	10.4
29/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
06/05/98	6.0	164.5	146.8	235.4	42.7	32.1	196.8	41.5	7.7	< 9.7	159.4	55.0	.9	4.2
13/05/98	5.2	174.3	143.5	193.6	22.1	20.9	173.2	22.7	9.8	< 9.7	171.6	51.0	6.9	5.3
20/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
27/05/98	4.5	49.7	34.4	48.1	6.3	< 4.1	16.9	11.1	< 1.3	< 9.7	48.9	25.0	29.5	27.4
03/06/98	5.1	39.4	27.7	39.6	27.2	13.6	40.2	29.0	3.2	< 9.7	36.1	18.0	7.6	10.7
10/06/98	4.9	22.1	14.9	22.0	8.6	4.8	9.3	13.2	< 1.3	< 9.7	21.1	12.0	12.0	16.9
17/06/98	6.6	22.9	9.3	5.6	13.9	38.3	90.8	19.9	18.3	< 9.7	21.2	< 10.0	.2	15.0
24/06/98	5.8	13.6	< 2.1	< 2.1	23.7	15.1	28.2	27.6	7.5	< 9.7	10.7	< 10.0	1.7	8.6
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
08/07/98	6.3	21.8	11.9	20.8	55.8	30.6	103.6	57.1	6.3	< 9.7	15.1	15.0	.5	7.6
15/07/98	4.7	39.7	18.5	24.5	25.8	10.9	20.4	31.7	4.3	< 9.7	36.6	19.0	19.5	9.3
22/07/98	6.0	24.5	12.6	34.4	25.0	44.4	79.5	27.7	3.1	< 9.7	21.4	11.0	1.0	4.8
29/07/98	6.5	25.3	17.9	51.5	34.9	39.6	78.1	34.8	4.9	< 9.7	21.1	16.0	.3	11.0
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/98	5.8	11.7	5.4	15.4	6.9	9.1	19.0	12.8	2.2	< 9.7	10.8	< 10.0	1.7	15.1
19/08/98	6.3	9.9	4.4	25.3	9.5	25.6	64.0	14.2	3.6	< 9.7	8.7	< 10.0	.5	14.2
26/08/98	4.4	92.4	91.4	85.2	21.7	9.4	42.2	26.1	4.3	< 9.7	89.8	45.0	43.7	11.6
02/09/98	5.7	23.1	18.0	31.1	29.4	17.3	27.6	33.1	2.3	< 9.7	19.5	13.0	2.1	14.8
09/09/98	5.9	< 2.5	3.4	12.4	29.0	20.5	23.5	32.9	2.3	< 9.7	< 6.0	< 10.0	1.4	22.0
16/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/09/98	4.5	60.1	57.5	69.2	7.9	4.4	17.6	14.7	2.2	< 9.7	59.1	32.0	28.8	34.8
01/10/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
07/10/98	6.5	58.9	16.6	75.4	90.6	34.9	68.2	103.6	16.6	< 9.7	48.0	29.0	.3	2.5
14/10/98	6.3	15.4	4.1	24.4	37.8	26.7	38.8	46.8	16.2	< 9.7	10.9	14.0	.5	14.6
21/10/98	5.8	10.0	< 2.1	7.4	39.3	27.7	25.1	45.9	3.2	< 9.7	5.3	10.0	1.4	83.6
28/10/98	5.4	33.1	19.7	34.7	68.2	29.6	24.3	80.1	6.6	< 9.7	24.9	20.0	4.1	4.1
04/11/98	5.8	27.8	6.9	25.0	100.0	43.5	26.6	114.6	3.3	< 9.7	15.8	23.0	1.4	10.3
11/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	8.7
18/11/98	5.2	38.1	25.3	54.4	38.7	14.2	28.7	41.9	9.4	< 9.7	33.4	19.0	6.5	7.8
25/11/98	6.3	29.4	9.9	64.2	60.9	23.8	25.4	63.9	5.1	< 9.7	22.1	18.0	.4	2.7
02/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4
09/12/98	6.0	16.7	5.1	29.8	31.2	31.4	15.0	34.2	1.5	< 9.7	12.9	11.0	1.0	15.4
16/12/98	6.4	56.6	13.1	86.6	75.4	38.8	31.4	85.9	3.8	< 9.7	47.5	25.0	.4	5.6
23/12/98	6.3	30.8	2.5	25.2	172.7	69.5	30.8	198.5	5.0	< 9.7	10.0	31.0	.5	12.5
30/12/98	5.7	25.5	6.9	19.7	112.7	52.8	19.4	132.1	3.3	< 9.7	11.9	24.0	1.8	18.6
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5023	5.6	30.7	19.1	36.0	40.3	24.7	33.7	46.8	3.8	< 9.7	26.0	17.4	7.9	590.3

Bottesford

1998

Site Code:	5121
Easting:	4797
Northing:	3376
Latitude :	52 55 46 N
Longitude:	0 48 51 W
Altitude (m):	32
Rainfall (mm):	561

Site environment:

Rural pasture

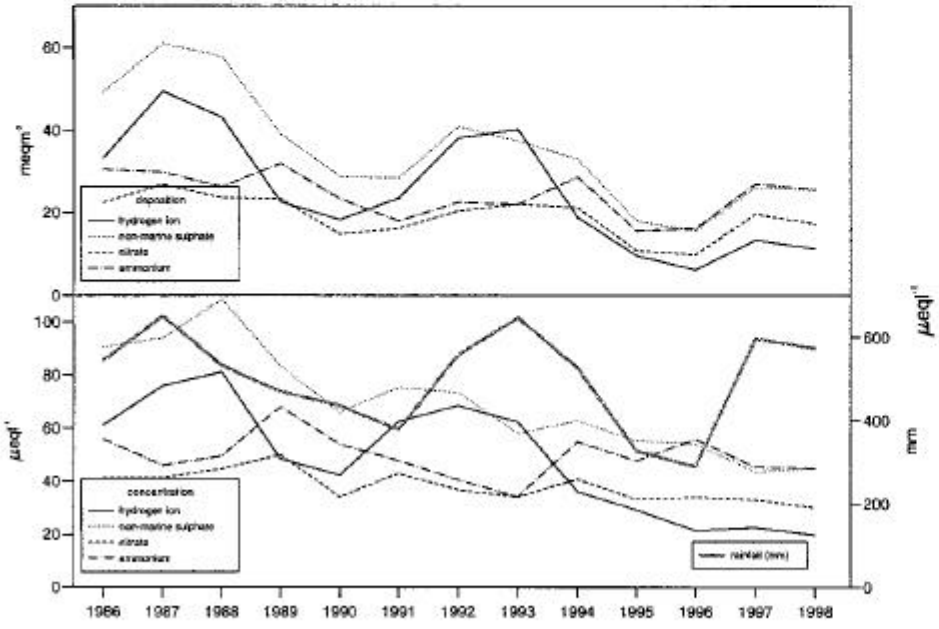
Other measurements:

DT, SO_2 (Powergen), ozone (PowerGen)

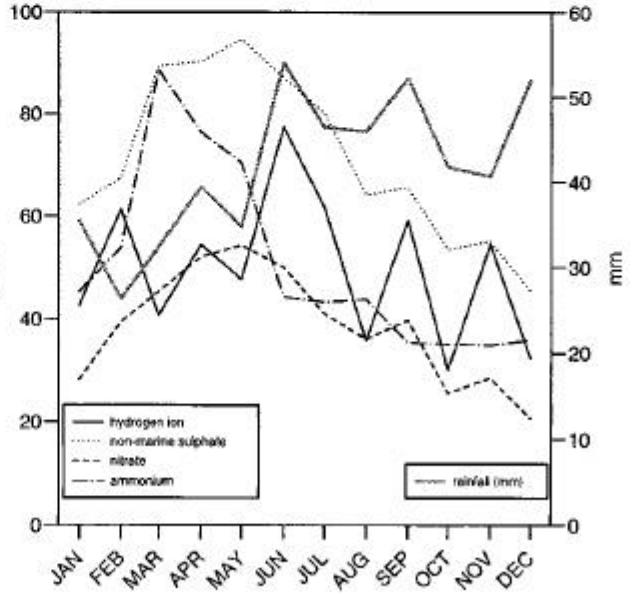
Site operator:

PowerGen

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	5.2	44.2	25.0	37.7	87.8	29.6	38.8	99.6	1.5	< 9.7	33.6	25.0	5.9	3.1
13/01/98	4.8	25.0	15.0	16.2	21.3	8.5	10.9	28.7	< 1.3	< 9.7	22.5	15.0	16.6	19.3
20/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/02/98	5.7	142.3	40.2	138.3	83.8	29.4	82.9	96.6	2.2	< 9.7	132.2	40.0	1.9	2.6
10/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17/02/98	4.9	169.7	47.2	128.7	86.3	28.9	86.0	98.8	5.3	< 9.7	159.3	47.0	13.8	1.8
24/02/98	6.2	78.3	20.6	81.6	80.0	32.8	73.6	96.8	4.2	< 9.7	68.6	32.0	.7	6.1
03/03/98	4.8	32.4	14.1	26.1	28.4	10.9	10.8	37.3	< 1.3	< 9.7	29.0	17.0	17.0	30.4
10/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0
17/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/03/98	6.2	60.0	29.7	93.4	6.7	12.6	86.7	11.6	4.7	< 9.7	59.2	19.0	.7	10.1
31/03/98	4.7	78.5	75.7	119.3	48.2	17.8	20.8	56.4	2.4	< 9.7	72.7	38.0	19.5	17.1
07/04/98	4.3	41.0	37.5	22.3	38.4	12.3	10.3	48.0	1.4	< 9.7	36.4	27.0	47.9	45.5
14/04/98	4.5	53.3	53.2	46.6	21.1	7.3	17.8	33.6	< 1.3	< 9.7	50.8	32.0	31.6	17.6
21/04/98	4.3	75.4	69.1	74.8	12.1	4.4	20.9	15.6	1.4	< 9.7	73.9	40.0	50.1	13.0
28/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
05/05/98	6.1	87.7	63.5	114.5	41.4	27.7	141.1	44.9	3.5	< 9.7	82.7	33.0	.7	12.8
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	4.2	214.7	132.1	167.2	17.6	23.5	142.6	67.3	5.7	< 9.7	212.5	73.0	61.7	3.1
26/05/98	4.7	51.5	43.3	65.0	9.6	6.6	26.1	18.8	< 1.3	< 9.7	50.4	26.0	22.4	30.0
02/06/98	5.0	36.7	27.0	37.7	16.4	10.3	23.9	18.9	1.7	< 9.7	34.8	17.0	11.2	15.6
09/06/98	4.0	109.4	56.7	55.8	30.2	8.9	16.2	54.2	2.7	< 9.7	105.8	71.0	112.2	15.3
16/06/98	6.1	77.2	37.2	92.9	9.2	13.2	88.2	18.4	4.9	< 9.7	76.1	24.0	.9	7.1
23/06/98	5.4	22.9	14.6	27.6	10.2	6.5	24.0	14.3	1.6	< 9.7	21.7	< 10.0	4.0	13.2
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.9
14/07/98	5.0	167.7	60.8	203.4	83.8	89.5	561.9	55.7	21.5	< 9.7	157.6	-	10.0	.7
21/07/98	6.2	66.6	48.1	41.8	37.2	26.7	203.1	32.8	7.7	< 9.7	62.1	23.0	.6	2.0
28/07/98	4.8	57.1	27.1	52.8	7.4	4.5	25.0	13.1	< 1.3	< 9.7	56.2	20.0	17.0	20.5
04/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	5.0	45.0	25.4	20.3	9.7	8.1	58.2	12.5	2.8	< 9.7	43.8	14.0	8.9	6.9
18/08/98	5.5	26.9	9.4	23.4	9.0	10.0	44.0	15.8	1.4	< 9.7	25.9	10.0	2.9	19.6
25/08/98	4.7	77.0	44.0	60.2	14.8	8.3	36.4	16.7	3.4	< 9.7	75.3	28.0	22.4	9.2
01/09/98	5.0	51.1	42.3	53.5	4.1	8.1	51.2	13.5	7.6	< 9.7	50.6	20.0	10.0	29.1
08/09/98	5.4	55.3	22.0	45.1	48.7	20.7	58.3	58.5	2.2	< 9.7	49.5	22.0	4.2	11.1
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
22/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29/09/98	4.5	55.3	43.3	54.3	58.0	16.5	13.4	66.0	1.8	< 9.7	48.3	33.0	30.2	32.2
06/10/98	5.1	168.8	50.7	90.5	392.4	102.6	101.8	462.8	9.8	< 9.7	121.5	90.0	7.6	5.0
13/10/98	5.9	30.6	13.9	34.1	20.4	12.7	37.5	25.1	1.6	< 9.7	28.2	12.0	1.2	6.6
20/10/98	5.3	19.2	6.0	10.4	34.5	18.8	25.9	40.7	6.3	< 9.7	15.0	12.0	5.2	39.4
27/10/98	4.7	29.6	11.3	14.4	45.1	13.9	11.2	53.0	1.5	< 9.7	24.2	20.0	18.6	30.1
03/11/98	4.8	38.8	17.1	31.8	37.2	14.2	16.8	47.7	2.4	< 9.7	34.3	21.0	14.1	12.6
10/11/98	5.0	29.8	16.8	23.8	48.5	18.8	23.6	56.5	1.8	< 9.7	24.0	14.0	9.3	3.3
17/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
24/11/98	5.3	225.9	41.5	269.9	98.4	33.0	85.5	126.3	3.3	< 9.7	214.0	61.0	4.9	2.1
01/12/98	4.7	74.3	32.3	75.2	64.5	12.4	28.2	84.4	4.6	< 9.7	66.5	33.0	22.4	5.8
08/12/98	5.0	31.0	14.0	37.3	20.9	10.7	10.4	27.7	< 1.3	< 9.7	28.5	14.0	9.1	19.2
15/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
22/12/98	5.3	21.0	5.6	16.5	36.3	21.7	11.0	44.3	< 1.3	< 9.7	16.7	13.0	5.5	26.8
29/12/98	4.9	20.2	15.6	17.4	28.5	13.1	11.1	33.6	< 1.3	< 9.7	16.8	15.0	13.8	21.2
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5121	4.9	48.6	30.1	44.6	32.7	14.0	30.6	41.6	2.4	< 9.7	44.6	23.8	19.8	573.1

Llyn Llydaw

1998

Site Code:	5153
Easting:	2638
Northing:	3549
Latitude :	53 04 35 N
Longitude:	04 01 42 W
Altitude (m):	490
Rainfall (mm):	4536

Site environment:

Very open moorland in Snowdon Horseshoe

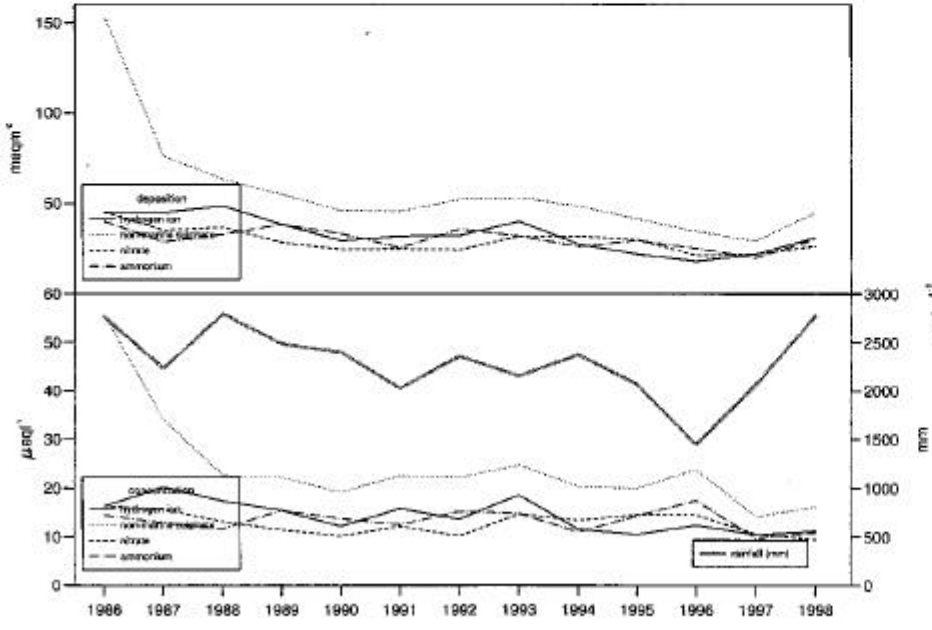
Other measurements:

DT

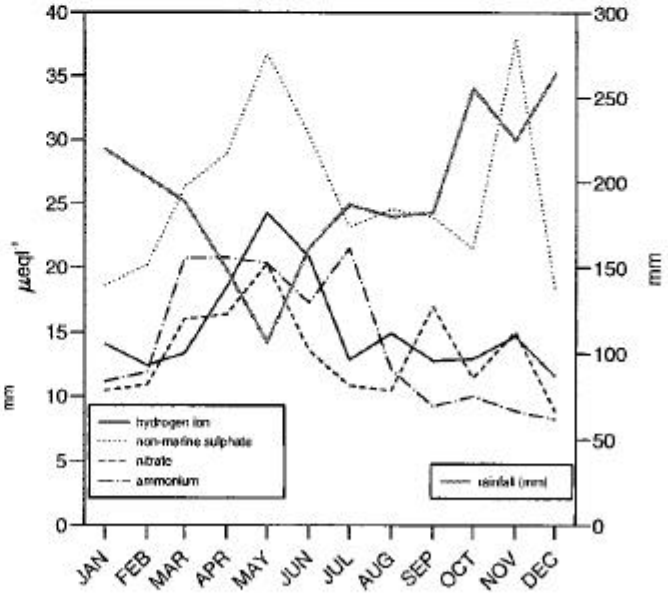
Site operator:

Countryside Council for Wales

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
02/01/98	5.3	30.8	3.6	< 2.1	226.1	76.3	21.1	243.2	3.3	< 9.7	3.5	41.0	5.2	73.8
07/01/98	5.0	38.4	9.4	6.3	226.7	72.3	21.2	248.2	3.5	< 9.7	11.1	46.0	9.5	87.5
14/01/98	5.1	19.4	6.6	4.6	79.9	34.1	11.6	89.7	1.5	< 9.7	9.8	19.0	7.9	63.5
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
28/01/98	5.5	77.9	36.8	74.9	190.2	72.3	31.6	198.2	3.7	< 9.7	54.9	43.0	3.1	4.0
04/02/98	4.8	32.4	10.4	13.2	85.6	29.2	9.0	90.8	< 1.3	< 9.7	22.1	25.0	16.6	62.5
11/02/98	4.4	127.3	78.0	83.2	181.4	48.0	48.0	197.7	5.6	< 9.7	105.5	63.0	39.8	5.0
18/02/98	5.2	44.0	21.6	30.0	143.8	51.4	24.7	167.9	3.4	< 9.7	26.7	35.0	6.3	19.1
25/02/98	5.5	10.8	3.5	4.9	34.5	26.7	16.4	37.9	< 1.3	< 9.7	6.6	< 10.0	3.0	114.8
04/03/98	5.2	15.7	4.2	6.1	55.7	36.1	17.1	61.5	< 1.3	< 9.7	8.9	14.0	5.6	125.9
11/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
18/03/98	5.0	22.0	12.8	17.1	9.7	5.3	13.8	13.9	< 1.3	< 9.7	20.8	11.0	9.5	44.3
25/03/98	4.9	22.3	14.8	16.1	15.1	8.1	16.6	16.4	< 1.3	< 9.7	20.5	12.0	12.3	29.2
01/04/98	4.6	38.6	25.0	23.7	62.9	21.4	8.0	70.1	1.8	< 9.7	31.0	28.0	25.1	57.6
08/04/98	4.5	61.3	35.0	32.3	153.0	42.3	18.2	178.6	3.6	< 9.7	42.9	51.0	30.9	30.9
15/04/98	4.6	49.3	25.6	24.1	134.2	41.3	10.5	147.6	2.9	< 9.7	33.1	41.0	26.9	65.9
22/04/98	4.8	27.1	8.4	8.4	62.4	25.9	9.0	71.4	< 1.3	< 9.7	19.6	21.0	15.5	34.6
29/04/98	5.5	36.9	12.8	33.5	61.0	44.7	47.1	66.7	1.5	< 9.7	29.5	20.0	3.5	42.3
06/05/98	4.6	61.9	23.1	25.8	116.5	35.0	17.4	131.7	2.9	< 9.7	47.9	40.0	25.7	24.4
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/05/98	4.7	97.6	56.3	110.8	122.4	42.1	61.2	128.5	3.3	< 9.7	82.8	48.0	19.5	5.0
27/05/98	4.3	55.1	27.3	20.6	21.3	6.2	6.1	25.1	< 1.3	< 9.7	52.6	34.0	52.5	45.9
03/06/98	4.8	23.2	12.4	13.1	41.8	19.9	9.2	47.7	< 1.3	< 9.7	18.2	17.0	14.1	58.0
10/06/98	4.8	25.8	11.4	9.1	74.9	29.5	10.4	86.9	1.6	< 9.7	16.8	21.0	15.8	57.1
17/06/98	5.0	13.0	5.9	2.7	8.4	< 4.1	8.1	12.8	< 1.3	< 9.7	12.0	< 10.0	9.3	103.7
24/06/98	4.9	21.1	5.1	5.6	46.0	15.4	5.5	50.6	< 1.3	< 9.7	15.6	15.0	11.7	43.1
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/07/98	5.6	25.5	8.3	22.2	44.3	20.2	16.2	51.2	2.7	< 9.7	20.1	14.0	2.6	35.1
15/07/98	5.1	19.8	5.5	12.1	38.5	15.9	6.2	43.0	< 1.3	< 9.7	15.2	14.0	8.7	57.8
22/07/98	4.7	25.8	7.4	10.8	31.5	10.5	5.2	34.4	< 1.3	< 9.7	22.0	15.0	18.6	84.3
29/07/98	4.9	15.1	4.8	4.6	26.0	9.7	8.0	28.5	< 1.3	< 9.7	12.0	11.0	11.5	67.2
05/08/98	4.9	53.2	50.2	32.7	135.9	39.2	43.5	132.0	6.3	< 9.7	36.8	35.0	11.7	3.9
12/08/98	5.0	24.4	8.5	11.1	50.1	19.7	16.0	55.7	1.7	< 9.7	18.4	17.0	10.0	22.1
19/08/98	5.5	10.6	3.4	9.3	12.4	9.5	7.2	15.6	< 1.3	< 9.7	9.1	< 10.0	3.4	126.2
26/08/98	4.5	79.0	82.4	90.2	31.5	10.9	28.7	30.8	4.0	< 9.7	75.2	36.0	30.9	6.6
02/09/98	5.1	18.5	7.4	8.3	54.5	25.6	12.9	62.5	< 1.3	< 9.7	12.0	16.0	8.7	89.8
09/09/98	5.1	19.8	4.7	6.2	73.9	32.1	14.1	85.0	1.5	< 9.7	10.9	18.0	7.4	98.2
16/09/98	4.4	56.3	27.3	20.1	68.6	17.3	8.8	80.3	1.7	< 9.7	48.0	35.0	42.7	4.5
23/09/98	4.2	105.4	104.1	100.8	8.4	< 4.1	24.0	12.3	1.4	< 9.7	104.4	51.0	66.1	8.2
30/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8
07/10/98	5.3	14.0	3.1	7.3	31.8	15.7	6.4	36.3	< 1.3	< 9.7	10.2	10.0	4.5	94.7
14/10/98	5.2	24.3	2.4	4.8	152.6	53.7	17.8	176.5	3.2	< 9.7	5.9	30.0	7.1	123.3
21/10/98	5.2	30.6	3.1	4.1	186.2	59.8	17.0	211.4	4.6	< 9.7	8.2	37.0	5.9	100.4
28/10/98	4.8	29.5	11.0	8.4	119.6	34.7	11.0	137.4	2.3	< 9.7	15.1	30.0	16.2	96.2
05/11/98	5.1	28.6	6.1	7.1	147.7	47.4	13.1	167.8	3.2	< 9.7	10.8	31.0	8.5	52.2
11/11/98	5.1	35.6	8.0	6.6	216.7	64.9	18.7	238.7	4.6	< 9.7	9.5	36.0	8.5	45.2
18/11/98	4.6	36.1	34.7	33.2	64.8	18.8	6.8	72.5	2.0	< 9.7	28.3	27.0	25.1	36.7
25/11/98	5.0	28.1	7.5	9.9	83.9	30.0	9.0	90.8	1.9	< 9.7	18.0	22.0	9.1	55.6
02/12/98	4.8	21.3	11.4	10.8	24.0	9.2	5.7	28.4	< 1.3	< 9.7	18.4	14.0	14.5	30.3
09/12/98	4.9	24.6	6.8	7.0	81.1	29.7	8.2	91.5	1.3	< 9.7	14.9	22.0	12.6	52.0
16/12/98	4.8	40.2	16.3	17.6	127.8	38.8	13.1	146.6	2.5	< 9.7	24.8	35.0	17.4	37.7
23/12/98	5.3	32.0	3.4	5.3	208.2	71.4	18.6	228.9	3.7	< 9.7	6.9	40.0	4.6	87.2
30/12/98	5.2	26.9	6.7	7.6	103.0	40.3	26.4	115.8	2.5	< 9.7	14.5	23.0	6.3	156.4
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5153	5.1	26.8	9.5	10.9	88.0	32.6	14.0	98.8	1.8	< 9.7	16.2	22.7	11.2	2777.3

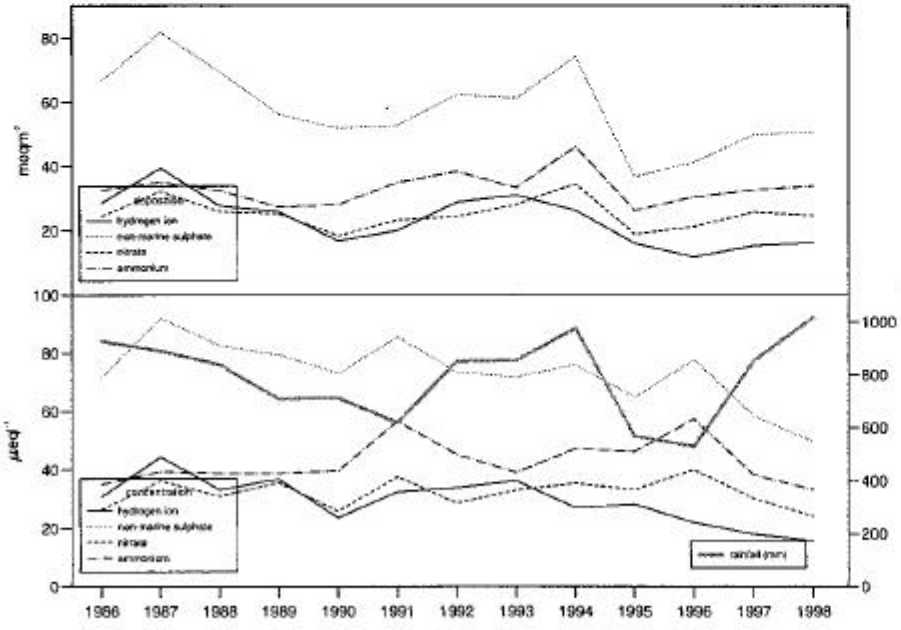
Wardlow Hay Cop

1998

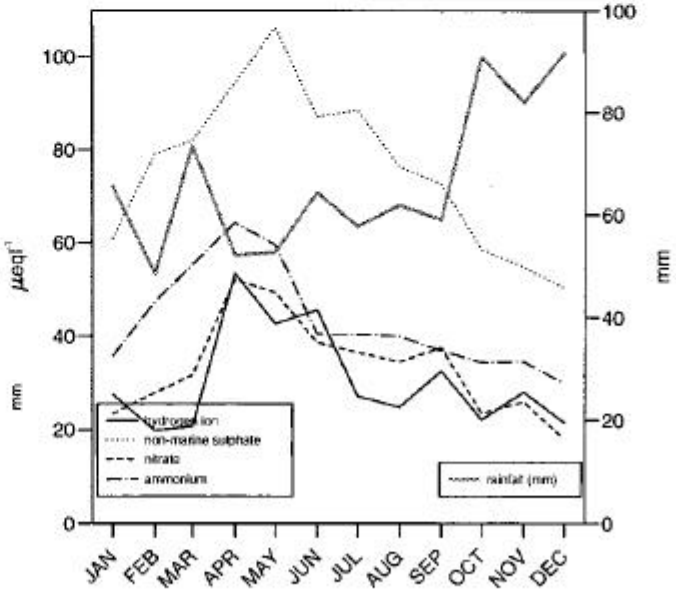
Site Code:	5120
Easting:	4177
Northing:	3739
Latitude :	53 55 41 N
Longitude:	1 44 05 W
Altitude (m):	350
Rainfall (mm):	1081

Site environment:
Open moorland
Other measurements:
DT
Site operator:
English Nature

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 ($\mu eq l^{-1}$)



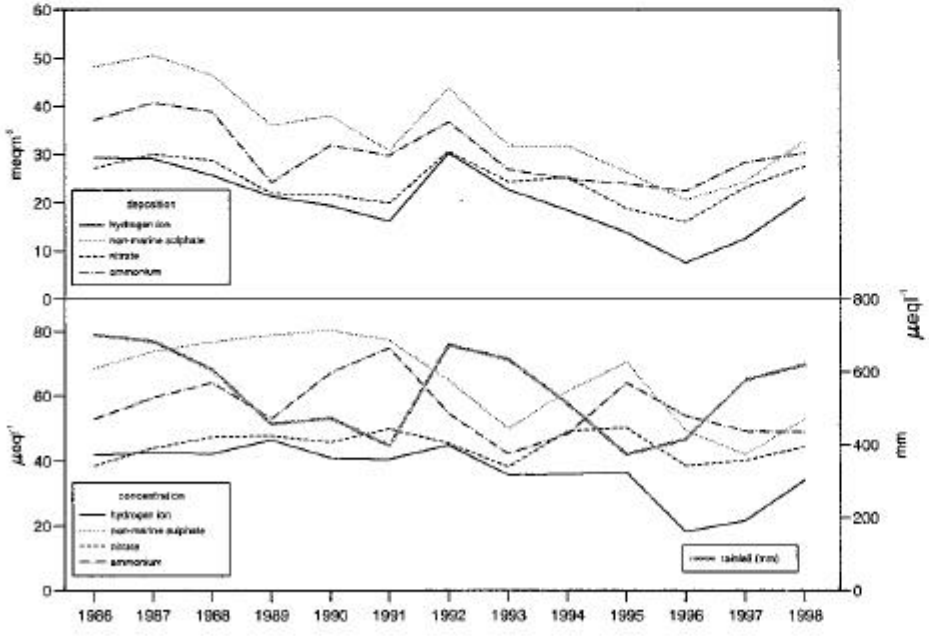
start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
04/01/98	4.8	39.6	16.3	23.6	62.8	21.3	27.5	72.9	< 1.3	< 9.7	32.0	25.0	14.5	70.8
18/01/98	4.8	86.8	44.0	67.6	90.0	25.3	71.8	109.0	2.4	< 9.7	76.0	39.0	14.1	7.9
25/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
01/02/98	6.9	228.7	36.3	63.7	155.0	37.9	338.3	180.7	5.9	< 9.7	210.0	66.0	.1	3.9
08/02/98	7.4	278.4	74.7	52.4	463.1	116.5	829.4	529.3	14.5	< 9.7	222.6	138.0	.0	1.5
17/02/98	6.8	138.4	33.8	77.2	103.0	25.6	424.8	110.2	11.9	< 9.7	126.0	45.0	.1	2.0
22/02/98	6.9	98.9	17.3	40.9	149.6	43.1	198.8	179.4	5.1	< 9.7	80.9	48.0	.1	9.4
01/03/98	5.0	34.2	8.6	13.8	30.7	11.4	29.3	37.0	< 1.3	< 9.7	30.5	15.0	10.5	89.7
08/03/98	5.5	61.1	27.8	44.4	81.7	31.0	81.4	93.6	1.6	< 9.7	51.3	29.0	3.2	11.8
15/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
22/03/98	5.8	119.8	64.5	103.1	15.7	9.1	167.5	25.2	1.6	< 9.7	117.9	33.0	1.7	12.2
28/03/98	4.5	79.5	58.0	77.7	31.4	11.1	41.5	41.9	< 1.3	< 9.7	75.7	39.0	31.6	33.3
05/04/98	4.1	77.5	68.3	43.0	48.5	13.1	32.1	73.9	1.9	< 9.7	71.7	61.0	72.4	25.9
14/04/98	4.6	85.0	45.5	52.5	29.4	8.9	74.6	41.0	1.9	< 9.7	81.5	35.0	27.5	16.1
21/04/98	4.6	63.3	47.5	59.7	16.4	5.9	33.0	21.0	< 1.3	< 9.7	61.3	30.0	26.9	27.0
27/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
03/05/98	7.1	121.6	66.4	112.1	48.2	25.7	668.8	52.8	4.4	< 9.7	115.8	41.0	.1	4.1
10/05/98	4.4	74.9	31.1	28.9	15.1	7.7	37.1	28.0	2.2	< 9.7	73.1	31.0	38.9	4.9
17/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
24/05/98	4.8	199.0	92.5	72.9	64.1	39.3	318.3	74.0	5.7	< 9.7	191.3	56.0	15.1	4.6
31/05/98	4.3	61.8	32.5	36.3	9.2	4.5	16.6	14.4	< 1.3	< 9.7	60.7	32.0	44.7	44.5
07/06/98	4.6	46.3	21.5	25.2	18.6	5.8	25.5	24.5	< 1.3	< 9.7	44.1	22.0	22.9	51.8
16/06/98	5.8	72.9	28.3	30.2	16.7	8.8	115.8	22.7	4.5	< 9.7	70.8	20.0	1.5	10.2
23/06/98	5.1	51.2	16.4	22.0	14.3	6.3	60.7	22.0	1.6	< 9.7	49.4	16.0	8.3	17.3
29/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
05/07/98	6.8	164.0	64.5	82.2	94.6	39.0	908.3	118.4	10.3	< 9.7	152.6	58.0	.2	5.1
12/07/98	6.2	79.9	15.3	30.1	97.0	39.0	334.7	116.8	4.0	< 9.7	68.2	34.0	.7	20.7
20/07/98	6.9	87.1	34.0	51.2	53.0	24.2	587.3	60.8	4.1	< 9.7	80.8	31.0	.1	7.6
27/07/98	5.5	57.7	23.1	28.1	16.3	6.8	101.4	21.6	2.1	< 9.7	55.7	17.0	3.2	30.6
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	7.0	153.4	51.7	23.1	88.3	32.8	1335.1	103.1	9.4	< 9.7	142.8	58.0	.1	5.3
17/08/98	6.3	37.3	11.5	18.6	22.4	13.7	515.1	26.8	< 1.3	< 9.7	34.6	15.0	.4	32.4
25/08/98	5.6	62.4	23.6	27.8	6.2	4.2	109.9	14.6	3.2	< 9.7	61.6	17.0	2.5	3.9
31/08/98	4.4	105.7	77.4	89.0	20.0	7.1	46.7	24.5	2.6	< 9.7	103.3	45.0	43.7	19.2
08/09/98	5.7	48.6	11.1	22.9	61.9	24.3	78.8	73.2	2.3	< 9.7	41.1	21.0	1.9	10.4
16/09/98	7.1	307.8	47.5	75.1	895.8	374.7	1095.5	1024.0	22.6	< 9.7	199.9	184.0	.1	1.3
20/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.0
27/09/98	4.4	56.8	40.1	45.6	23.0	7.9	19.5	32.0	< 1.3	< 9.7	54.0	31.0	38.0	62.9
04/10/98	4.2	95.9	40.5	45.7	131.5	32.7	33.8	160.9	3.2	< 9.7	80.0	59.0	56.2	18.5
11/10/98	5.5	39.1	7.4	23.7	81.0	30.0	47.2	94.4	2.2	< 9.7	29.4	23.0	2.9	40.1
18/10/98	5.6	24.1	4.1	10.6	94.6	37.9	26.2	107.2	2.9	< 9.7	12.8	21.0	2.6	123.8
27/10/98	5.6	58.8	7.7	19.7	225.5	68.5	56.1	252.7	5.4	< 9.7	31.7	47.0	2.3	37.7
01/11/98	4.7	41.9	18.3	17.4	50.7	13.7	23.4	63.9	2.4	< 9.7	35.8	26.0	22.4	42.4
08/11/98	5.8	69.6	17.9	28.7	189.1	56.1	82.0	215.1	4.2	< 9.7	46.8	39.0	1.6	23.7
15/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
22/11/98	5.5	60.6	20.3	42.0	74.2	25.8	68.5	85.9	2.1	< 9.7	51.6	26.0	2.9	17.3
29/11/98	5.1	227.4	79.2	157.5	223.6	56.3	195.1	254.4	9.7	< 9.7	200.5	81.0	8.7	2.1
06/12/98	4.8	66.2	22.2	55.7	23.4	7.6	41.1	33.4	< 1.3	< 9.7	63.4	24.0	14.5	22.6
13/12/98	5.9	51.5	11.8	24.4	125.2	43.4	78.6	147.3	3.0	< 9.7	36.4	30.0	1.3	20.7
20/12/98	5.9	71.0	11.6	50.4	186.6	64.2	51.7	217.1	4.0	< 9.7	48.5	44.0	1.3	13.4
29/12/98	5.4	48.2	27.8	47.1	141.1	53.2	36.9	159.8	3.3	< 9.7	31.2	33.0	4.0	5.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5120	5.2	57.6	24.3	33.3	65.4	22.8	88.5	77.8	2.1	< 9.7	49.7	29.4	16.0	1017.8

Driby
1998

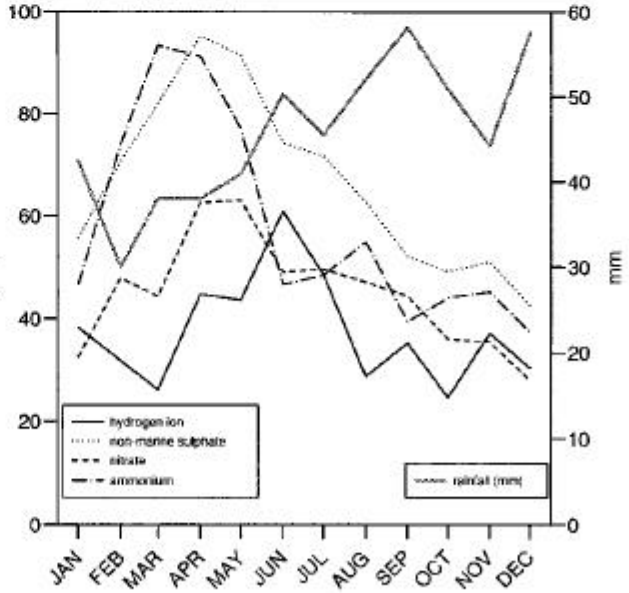
Site Code:	5136
Easting:	5386
Northing:	3744
Latitude :	53 14 54 N
Longitude:	0 04 39 E
Altitude (m):	47
Rainfall (mm):	737

Site environment:
Sheep pasture
Other measurements:
DT, Met
Site operator:
Anglian Water Services Ltd

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	5.2	68.5	34.7	64.7	138.2	43.9	34.0	161.0	4.2	< 9.7	51.8	36.0	6.6	4.6
13/01/98	4.7	57.1	22.5	22.0	247.3	68.1	23.2	272.6	4.5	< 9.7	27.3	58.0	19.5	20.3
20/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.4
27/01/98	4.5	98.0	57.3	60.7	146.2	37.9	45.2	167.5	6.6	< 9.7	80.4	52.0	30.2	2.2
03/02/98	5.0	142.7	74.2	154.4	210.7	59.9	74.3	235.3	5.1	< 9.7	117.3	64.0	8.9	2.3
10/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
24/02/98	6.1	112.8	39.5	134.7	148.2	53.2	93.9	202.6	4.6	< 9.7	94.9	54.0	.8	6.7
03/03/98	4.6	43.5	25.4	37.6	50.1	15.6	13.2	67.1	1.3	< 9.7	37.4	26.0	25.7	23.7
10/03/98	5.0	81.4	62.2	94.6	153.0	44.3	35.3	180.5	4.3	< 9.7	63.0	46.0	11.2	4.9
17/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/03/98	6.5	102.6	57.7	173.2	35.2	25.0	112.3	38.5	2.1	< 9.7	98.4	36.0	.3	11.4
31/03/98	5.0	56.1	45.7	69.6	78.7	31.3	30.3	88.0	2.2	< 9.7	46.7	32.0	10.5	16.5
07/04/98	4.2	68.8	70.1	40.8	112.8	27.8	10.1	130.4	2.5	< 9.7	55.2	65.0	69.2	48.1
14/04/98	4.2	67.3	61.4	54.2	54.4	14.7	9.8	65.1	1.4	< 9.7	60.8	50.0	63.1	35.9
21/04/98	4.5	84.7	52.7	80.9	24.9	8.6	35.7	28.2	2.3	< 9.7	81.7	37.0	31.6	12.3
28/04/98	4.1	239.1	147.8	166.7	525.8	124.8	58.1	591.1	13.8	< 9.7	175.8	147.0	83.2	5.3
05/05/98	6.5	114.7	77.1	133.3	92.3	45.1	191.8	102.0	5.7	< 9.7	103.5	47.0	.3	9.1
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
19/05/98	4.1	327.6	212.3	225.1	151.8	59.0	185.6	149.7	10.7	< 9.7	309.3	115.0	77.6	2.6
26/05/98	4.8	56.6	48.9	62.6	33.8	11.2	17.9	36.5	6.0	< 9.7	52.5	27.0	16.6	61.8
09/06/98	4.3	53.5	28.5	23.1	38.0	9.1	7.8	42.7	1.3	< 9.7	48.9	34.0	45.7	39.6
16/06/98	4.1	83.6	48.7	22.1	26.2	11.8	36.8	29.1	4.5	< 9.7	80.4	45.0	74.1	5.0
23/06/98	4.7	41.5	23.3	26.4	14.4	7.1	16.7	19.8	3.2	< 9.7	39.8	20.0	20.4	26.5
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/07/98	5.1	132.3	51.7	80.8	84.4	45.0	159.0	124.3	13.2	< 9.7	122.1	44.0	7.2	2.7
14/07/98	6.1	167.6	120.5	156.6	120.2	61.6	258.5	143.0	8.9	< 9.7	153.1	61.0	.7	1.8
21/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7
28/07/98	4.0	74.5	42.2	26.1	7.9	< 4.1	7.6	35.1	< 1.3	< 9.7	73.5	51.0	89.1	34.0
04/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	5.3	36.3	24.0	12.6	23.7	11.5	71.9	23.8	6.1	< 9.7	33.5	15.0	4.9	7.8
18/08/98	4.9	41.7	27.6	28.8	32.4	14.5	42.1	37.4	2.5	< 9.7	37.8	20.0	12.0	24.1
01/09/98	4.1	73.8	93.3	68.2	24.4	6.3	14.9	25.6	< 1.3	< 9.7	70.9	52.0	79.4	15.2
08/09/98	4.8	44.1	17.2	28.5	78.5	25.7	19.5	94.0	2.4	< 9.7	34.6	28.0	17.4	14.8
15/09/98	4.3	76.7	65.5	51.8	175.6	43.7	22.7	203.7	4.2	< 9.7	55.5	60.0	45.7	59.5
13/10/98	4.9	34.0	17.0	22.6	46.7	14.3	17.3	55.3	2.3	< 9.7	28.4	20.0	13.5	16.2
20/10/98	4.9	29.9	13.1	21.1	51.2	17.9	16.6	62.8	1.7	< 9.7	23.8	21.0	13.5	20.6
27/10/98	4.8	32.6	20.8	23.6	48.2	15.0	11.7	56.4	1.8	< 9.7	26.8	22.0	17.4	10.3
03/11/98	5.0	40.8	21.3	25.6	118.5	34.3	24.2	134.8	5.6	< 9.7	26.5	24.0	9.3	6.9
10/11/98	4.6	52.3	40.3	56.1	88.4	25.0	19.2	111.0	3.6	< 9.7	41.7	30.0	24.0	5.1
17/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
24/11/98	4.8	50.3	24.2	61.0	46.5	16.5	14.0	52.9	2.1	< 9.7	44.7	26.0	17.0	7.8
01/12/98	5.1	84.5	52.2	81.6	268.0	73.9	35.0	297.9	7.1	< 9.7	52.2	61.0	7.9	2.5
08/12/98	4.8	31.8	23.8	38.2	26.7	10.1	8.6	32.3	< 1.3	< 9.7	28.5	19.0	17.0	22.1
15/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8
22/12/98	5.2	27.7	10.6	22.8	52.2	19.2	19.5	61.7	1.3	< 9.7	21.4	15.0	6.2	8.8
29/12/98	5.2	22.1	16.8	21.1	57.7	26.1	15.4	64.8	< 1.3	< 9.7	15.2	17.0	5.9	12.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5136	4.7	62.2	44.6	49.1	76.8	22.9	26.1	90.3	3.0	< 9.7	53.0	39.5	34.1	619.6

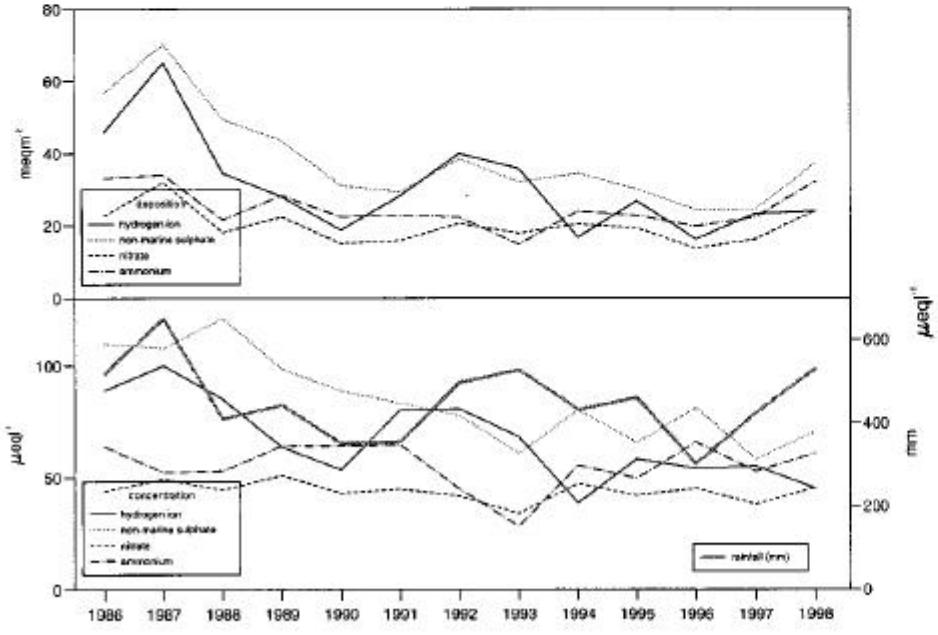
Jenny Hurn

1998

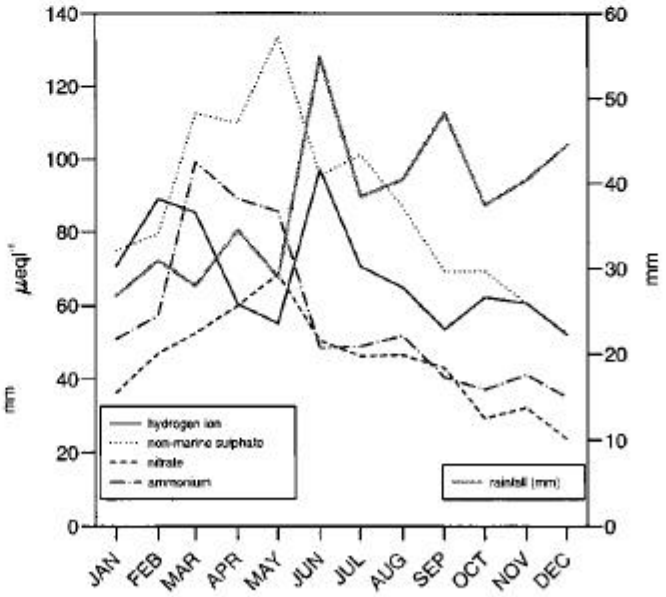
Site Code:	5118
Easting:	4816
Northing:	3986
Latitude :	53 28 39 N
Longitude:	0 46 13 W
Altitude (m):	4
Rainfall (mm):	563

Site environment:
Open arable land
Other measurements:
DT, SO_2 (PowerGen)
Site operator:
PowerGen

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 ($\mu eq l^{-1}$)



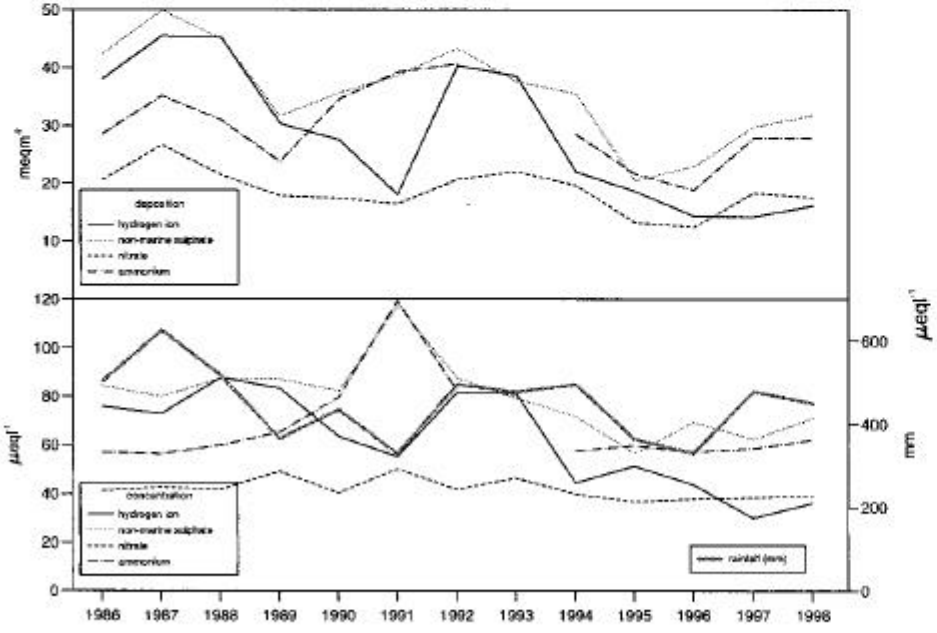
start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	4.1	53.3	23.5	48.3	35.2	11.8	18.2	112.6	< 1.3	< 9.7	49.1	52.0	75.9	8.8
13/01/98	4.6	36.0	15.5	18.3	127.4	38.2	14.8	155.9	2.1	< 9.7	20.6	39.0	25.1	25.7
20/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
27/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/02/98	5.5	172.8	86.7	184.2	127.0	52.2	110.7	165.6	3.5	< 9.7	157.5	60.0	3.5	1.4
10/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17/02/98	4.7	174.4	52.8	180.9	81.2	35.4	98.7	173.6	5.7	< 9.7	164.6	60.0	19.1	1.8
24/02/98	6.1	157.8	38.0	113.9	182.0	65.4	142.0	216.5	5.1	< 9.7	135.9	57.0	.9	2.6
03/03/98	4.2	50.4	25.3	36.0	40.8	11.9	11.7	91.0	< 1.3	< 9.7	45.5	42.0	66.1	20.2
10/03/98	4.2	49.7	29.9	47.5	59.9	17.1	23.1	145.8	1.8	< 9.7	42.5	52.0	66.1	4.6
17/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/03/98	4.8	114.6	55.0	136.5	16.8	10.9	41.5	29.2	2.0	< 9.7	112.6	37.0	17.0	9.7
02/04/98	4.6	61.1	45.5	66.7	40.0	17.0	20.6	52.1	4.3	< 9.7	56.3	34.0	27.5	11.2
07/04/98	4.1	75.9	73.2	46.8	116.1	29.6	14.7	139.1	3.0	< 9.7	61.9	54.0	81.3	19.0
14/04/98	4.1	94.9	97.5	85.2	130.8	35.8	37.5	178.3	3.7	< 9.7	79.1	79.0	83.2	11.6
21/04/98	4.1	113.9	63.4	88.9	22.7	8.8	26.5	58.2	3.4	< 9.7	111.2	57.0	74.1	5.6
28/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
05/05/98	5.3	122.6	68.3	105.8	40.3	30.5	139.2	44.3	3.9	< 9.7	117.8	39.0	5.4	12.3
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	5.6	648.8	334.5	538.5	122.4	120.8	818.3	257.0	28.5	< 9.7	634.1	-	2.5	.8
27/05/98	4.7	103.7	63.0	86.5	20.1	15.4	62.2	37.9	4.6	< 9.7	101.3	42.0	19.5	23.8
02/06/98	4.2	62.1	27.4	32.7	14.4	6.5	11.7	37.9	1.7	< 9.7	60.4	40.0	60.3	31.9
09/06/98	4.4	54.2	28.6	35.4	22.6	8.1	13.2	31.2	< 1.3	< 9.7	51.5	30.0	36.3	47.5
16/06/98	4.0	119.5	40.0	31.4	14.4	14.8	46.4	37.0	5.6	< 9.7	117.7	64.0	102.3	6.3
23/06/98	4.2	63.4	23.6	34.5	13.3	10.7	24.7	57.8	3.5	< 9.7	61.8	45.0	60.3	18.5
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/07/98	6.6	132.8	41.2	102.8	73.4	71.9	615.7	97.4	62.4	< 9.7	123.9	48.0	.3	5.5
14/07/98	5.4	162.4	59.0	85.3	106.9	56.2	169.2	126.3	16.2	< 9.7	149.5	49.0	4.3	2.2
21/07/98	5.8	71.4	40.4	49.8	25.1	27.0	85.7	31.2	9.8	< 9.7	68.3	23.0	1.5	9.7
28/07/98	4.3	77.6	44.8	56.2	15.2	10.0	29.5	27.9	6.0	< 9.7	75.8	37.0	49.0	19.7
04/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/08/98	5.5	109.1	47.2	55.5	44.7	38.0	131.5	63.9	19.0	< 9.7	103.7	33.0	3.5	3.2
18/08/98	6.5	94.6	25.7	48.8	29.8	45.4	479.8	59.4	30.0	< 9.7	91.0	21.0	.3	7.4
25/08/98	4.1	86.8	50.3	78.2	15.5	10.0	30.4	91.7	7.0	< 9.7	85.0	60.0	79.4	19.5
01/09/98	4.1	114.8	133.5	140.3	8.7	< 4.1	10.5	18.1	1.7	< 9.7	113.8	67.0	85.1	36.7
08/09/98	4.7	61.1	17.9	41.9	42.7	16.8	29.3	61.7	4.5	< 9.7	56.0	25.0	18.2	9.9
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
22/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
29/09/98	4.3	97.6	73.7	74.4	141.6	39.3	36.2	163.0	5.0	< 9.7	80.6	58.0	44.7	23.6
06/10/98	5.3	245.0	77.2	133.8	630.0	171.3	145.8	743.6	17.4	< 9.7	169.1	140.0	4.7	3.0
13/10/98	5.0	34.9	12.6	21.5	57.2	18.8	20.7	64.9	2.6	< 9.7	28.0	20.0	10.2	10.6
20/10/98	4.7	33.7	8.5	18.4	49.1	16.5	18.6	68.4	2.6	< 9.7	27.8	22.0	20.4	32.7
27/10/98	4.7	70.9	21.8	37.7	203.1	56.2	31.4	235.5	5.2	< 9.7	46.5	52.0	18.2	13.3
03/11/98	4.5	104.8	22.9	68.1	212.3	57.1	34.9	251.8	6.2	< 9.7	79.2	62.0	28.8	8.3
10/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
17/11/98	4.0	90.8	80.0	73.7	42.8	13.8	18.6	72.7	1.8	< 9.7	85.7	64.0	95.5	8.6
24/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3
01/12/98	4.0	104.6	31.8	81.9	39.2	12.8	21.3	135.4	1.6	< 9.7	99.8	76.0	109.6	11.3
08/12/98	4.4	70.5	21.8	71.2	49.5	13.7	11.4	85.8	2.4	< 9.7	64.5	41.0	42.7	14.4
15/12/98	4.3	93.4	29.8	66.3	74.8	20.7	25.0	106.3	2.3	< 9.7	84.4	44.0	45.7	3.5
22/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29/12/98	4.8	36.4	19.3	24.3	160.2	42.4	18.1	187.7	2.8	< 9.7	17.1	39.0	14.8	18.1
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5118	4.5	77.7	45.2	60.6	61.1	21.6	43.7	89.4	4.4	< 9.7	70.3	45.0	45.0	529.6

Thorganby
1998

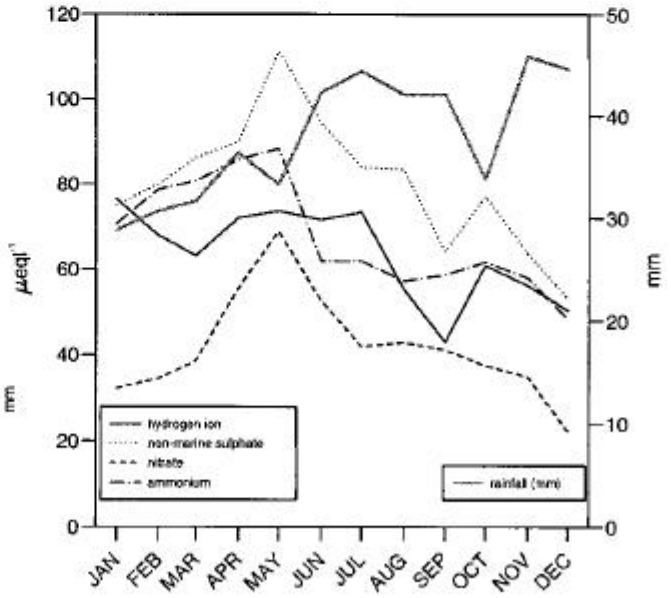
Site Code:	5117
Easting:	4676
Northing:	4428
Latitude :	53 52 36 N
Longitude:	0 58 19 W
Altitude (m):	8
Rainfall (mm):	565

Site environment:
Open meadow and arable land
Other measurements:
DT
Site operator:
Selby District Council

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



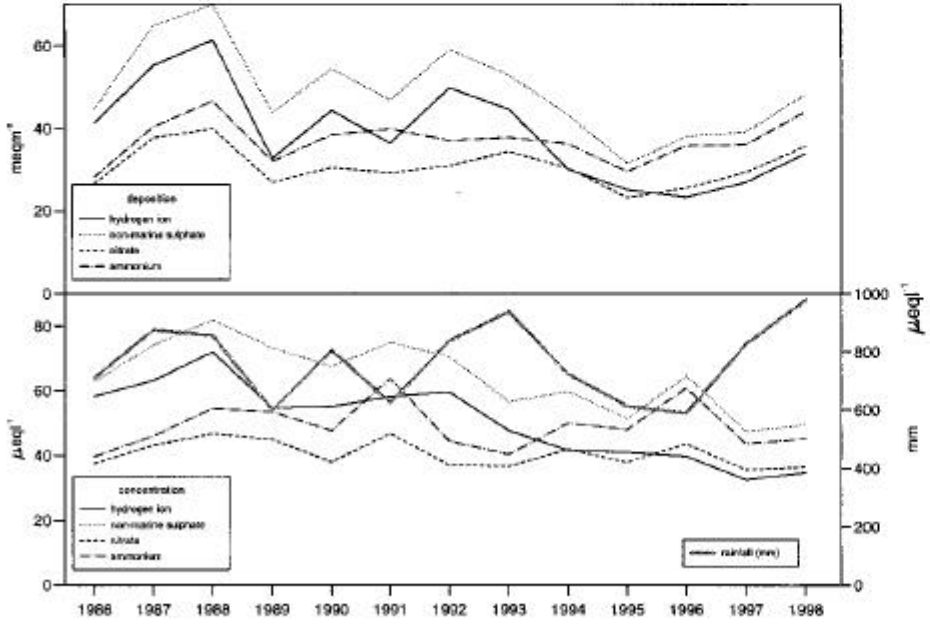
start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	4.3	79.2	22.5	43.5	130.9	35.1	27.9	178.5	12.1	< 9.7	63.4	56.0	46.8	15.3
14/01/98	4.7	40.7	14.5	19.5	130.2	39.0	20.8	157.0	3.1	< 9.7	25.0	38.0	21.9	22.1
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
11/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9
25/02/98	4.1	50.3	21.2	27.6	35.8	13.3	28.2	124.5	1.6	< 9.7	46.0	52.0	74.1	23.6
04/03/98	4.2	46.5	25.7	38.8	71.9	19.3	17.4	143.4	1.8	< 9.7	37.8	47.0	63.1	19.1
11/03/98	7.2	53.2	16.3	9.1	40.0	27.7	606.1	42.2	4.8	< 9.7	48.3	31.0	.1	1.4
18/03/98	6.7	253.1	84.3	591.4	49.7	29.0	127.6	73.9	242.4	614.5	247.1	112.0	.2	9.5
25/03/98	4.6	83.3	55.2	86.8	26.5	15.1	37.8	36.3	2.0	< 9.7	80.1	37.0	25.7	13.9
01/04/98	4.0	75.2	38.6	56.2	25.8	9.3	17.5	95.3	3.8	< 9.7	72.1	49.0	93.3	24.6
08/04/98	4.3	48.0	44.3	34.8	97.8	26.6	17.1	127.3	3.4	< 9.7	36.3	38.0	44.7	18.7
15/04/98	4.2	150.7	86.0	104.5	358.2	89.1	46.2	411.7	8.8	< 9.7	107.6	104.0	63.1	8.4
22/04/98	4.3	159.6	57.2	208.9	76.0	22.6	50.0	167.4	46.3	81.9	150.5	75.0	46.8	14.3
29/04/98	7.8	468.1	14.8	1072.6	349.3	178.6	594.4	258.4	190.6	528.8	426.0	303.0	.0	4.2
06/05/98	6.1	95.6	76.9	118.8	25.8	34.6	544.8	39.9	5.0	< 9.7	92.5	35.0	.9	12.1
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
27/05/98	7.1	151.2	44.1	1363.5	53.2	75.3	70.9	86.9	156.7	332.2	144.8	138.0	.1	40.5
03/06/98	4.2	97.6	54.5	99.1	19.9	11.9	32.6	90.6	4.4	< 9.7	95.2	61.0	70.8	7.7
10/06/98	4.4	71.6	46.6	57.5	34.5	12.0	21.3	44.5	3.6	< 9.7	67.5	38.0	42.7	23.6
17/06/98	4.2	147.1	59.5	43.4	22.1	45.1	132.1	132.6	51.5	< 9.7	144.4	65.0	58.9	3.9
24/06/98	8.4	1123.3	2.5	11843.7	329.5	622.3	111.2	862.0	1059.1	4991.4	1083.6	1123.0	.0	12.1
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
08/07/98	7.2	621.2	60.3	2190.9	477.6	106.5	219.2	677.9	500.2	1343.4	563.7	323.0	.1	3.6
15/07/98	4.3	115.6	27.1	86.4	45.1	23.0	57.5	125.6	11.3	< 9.7	110.2	61.0	53.7	8.2
22/07/98	7.7	266.6	27.1	1774.6	127.9	88.1	96.4	92.9	402.4	510.1	251.2	230.0	.0	19.5
29/07/98	4.7	53.8	23.3	49.9	9.4	4.5	14.1	19.7	1.5	< 9.7	52.7	22.0	22.4	40.9
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
12/08/98	5.1	206.9	67.1	78.4	90.5	61.5	200.2	118.3	17.2	< 9.7	196.0	56.0	7.6	2.5
19/08/98	8.2	1556.5	2.3	12484.7	772.9	160.1	191.2	315.1	2335.3	6637.5	1463.4	134.0	.0	8.4
26/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	15.2
02/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/09/98	6.4	67.4	19.4	96.6	83.6	53.9	150.5	100.1	13.2	< 9.7	57.3	31.0	.4	4.1
16/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/09/98	7.7	320.1	128.4	1577.4	369.1	74.5	111.6	424.7	400.8	662.5	275.6	270.0	.0	10.1
30/09/98	7.8	654.2	78.7	3729.8	495.5	107.2	58.5	391.0	646.4	1986.0	594.5	514.0	.0	5.5
07/10/98	7.6	490.9	16.3	3423.4	396.4	154.3	143.0	635.0	651.5	2798.1	443.1	495.0	.0	6.7
14/10/98	4.5	72.0	18.1	55.8	65.8	19.7	24.1	103.9	4.1	< 9.7	64.1	33.0	28.2	5.5
21/10/98	4.9	61.9	8.8	30.3	219.0	59.7	26.1	253.9	5.4	< 9.7	35.6	51.0	12.9	5.0
28/10/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
04/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
11/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
18/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
25/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
09/12/98	4.4	45.2	15.7	34.8	35.2	10.5	11.8	60.6	< 1.3	< 9.7	41.0	31.0	38.0	12.1
16/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6
23/12/98	4.8	56.2	11.1	38.2	77.6	22.6	12.9	96.6	2.8	< 9.7	46.9	27.0	17.8	4.9
30/12/98	4.6	64.5	31.3	45.0	132.4	34.3	38.4	180.9	7.3	< 9.7	48.6	50.0	26.3	10.5
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5117	4.5	68.5	33.9	52.8	67.0	22.6	53.1	107.1	4.8	442.7	60.5	42.9	43.0	448.3

High Muffles
1998

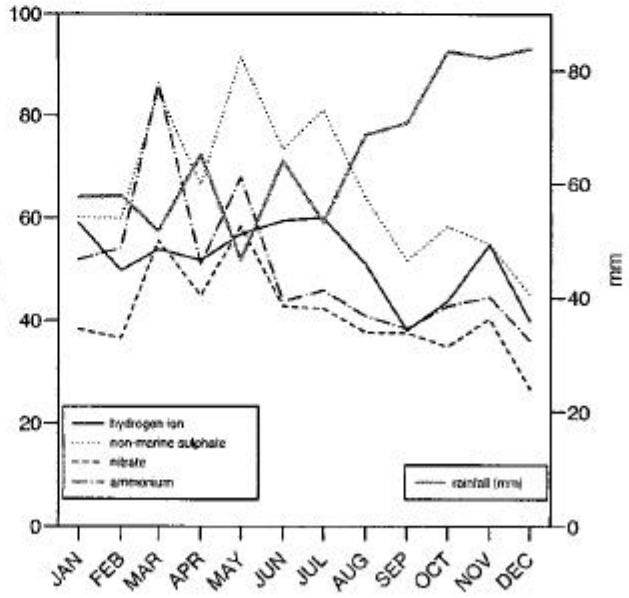
Site Code:	5009
Easting:	4776
Northing:	4939
Latitude :	54 20 05 N
Longitude:	0 48 23 W
Altitude (m):	267
Rainfall (mm):	897

Site environment:
Forestry plantation
Other measurements:
WOC,DT,Daily SO_2,TIN,TIA,WF,ozone,EMEP
Site operator:
Forest Enterprise

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	4.6	56.2	27.1	43.0	39.4	13.3	18.8	49.3	< 1.3	< 9.7	51.5	29.0	26.9	24.2
14/01/98	4.6	57.8	15.8	15.8	296.7	78.1	19.0	325.2	5.7	< 9.7	22.0	65.0	24.0	39.5
21/01/98	4.0	152.2	100.4	70.7	441.6	103.5	40.9	547.8	9.8	< 9.7	99.0	137.0	109.6	4.3
28/01/98	5.3	97.9	44.5	58.0	160.8	44.4	39.7	188.9	3.5	< 9.7	78.6	-	5.0	1.1
04/02/98	5.5	212.5	78.3	260.2	119.3	39.0	94.9	141.2	3.8	< 9.7	198.2	61.0	3.0	1.2
11/02/98	6.4	117.2	37.4	68.8	164.9	49.8	136.3	189.9	5.2	< 9.7	97.4	49.0	.4	1.9
18/02/98	4.6	207.4	75.5	224.2	122.9	40.0	112.1	223.9	5.1	< 9.7	192.6	74.0	24.0	1.9
25/02/98	4.7	37.0	19.8	31.9	26.5	10.0	12.9	34.3	< 1.3	< 9.7	33.8	22.0	21.4	29.0
04/03/98	4.3	53.5	39.3	41.5	95.7	24.9	11.0	124.8	1.6	< 9.7	41.9	46.0	45.7	31.7
11/03/98	4.8	70.0	35.0	49.0	163.4	48.1	31.7	185.0	4.9	< 9.7	50.3	43.0	17.8	4.0
18/03/98	4.3	179.7	135.8	266.5	34.0	15.0	42.6	60.2	2.3	< 9.7	175.6	77.0	52.5	9.5
25/03/98	4.8	99.1	68.0	121.3	13.9	7.2	53.6	28.5	1.7	< 9.7	97.5	37.0	17.8	21.1
01/04/98	4.3	47.0	34.2	30.0	28.4	8.7	5.8	37.7	< 1.3	< 9.7	43.6	27.0	46.8	60.5
08/04/98	4.6	56.3	23.3	11.4	297.3	79.7	21.2	337.0	6.7	< 9.7	20.5	53.0	27.5	72.2
15/04/98	4.1	95.5	63.5	49.0	169.2	42.2	15.2	193.3	4.3	< 9.7	75.1	73.0	75.9	23.4
22/04/98	4.0	101.7	73.1	76.9	14.8	5.0	19.6	45.6	< 1.3	< 9.7	100.0	67.0	112.2	20.3
29/04/98	5.8	57.3	35.8	50.9	156.0	79.2	82.0	161.8	4.8	< 9.7	38.5	37.0	1.7	7.7
06/05/98	5.1	109.4	74.3	108.5	50.2	23.3	97.7	57.8	3.0	< 9.7	103.3	39.0	8.5	13.1
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
20/05/98	4.9	72.3	23.3	40.1	175.6	64.1	45.5	206.3	5.4	< 9.7	51.1	47.0	12.0	16.9
27/05/98	4.5	43.1	39.2	37.4	25.3	8.7	4.9	37.9	< 1.3	< 9.7	40.1	27.0	33.9	50.5
03/06/98	4.4	82.5	36.0	57.7	29.2	10.0	21.2	39.0	2.6	< 9.7	78.9	40.0	43.7	17.7
10/06/98	4.3	67.2	49.9	40.0	90.8	22.6	11.0	97.4	2.5	< 9.7	56.2	47.0	52.5	20.5
17/06/98	4.8	129.0	63.3	102.8	35.1	16.9	82.0	42.1	5.1	< 9.7	124.8	38.0	17.8	4.1
24/06/98	4.5	50.5	23.2	37.5	15.1	6.2	16.9	25.3	1.5	< 9.7	48.6	24.0	29.5	26.9
01/07/98	5.0	110.4	49.3	20.3	223.0	79.0	159.4	218.3	19.6	< 9.7	83.6	15.0	10.0	1.6
08/07/98	4.7	52.6	22.5	47.7	11.5	5.2	16.2	23.0	1.7	< 9.7	51.2	21.0	21.9	16.3
15/07/98	4.5	85.0	25.8	58.0	47.4	16.1	25.0	62.8	2.6	< 9.7	79.3	38.0	35.5	11.7
22/07/98	5.0	47.3	28.6	48.7	14.7	7.8	33.1	22.5	1.7	< 9.7	45.6	18.0	11.0	18.8
29/07/98	4.5	68.5	23.9	55.4	10.7	4.9	13.9	23.1	1.9	< 9.7	67.2	28.0	30.9	14.1
05/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/08/98	6.6	50.5	23.3	47.7	67.1	38.5	177.1	73.3	6.0	< 9.7	42.4	22.0	.3	2.9
19/08/98	4.5	44.0	28.3	29.3	30.7	11.4	16.5	37.1	< 1.3	< 9.7	40.3	27.0	28.2	27.5
26/08/98	4.4	76.2	89.4	94.2	24.7	9.3	43.9	27.3	2.5	< 9.7	73.3	39.0	36.3	16.4
02/09/98	3.9	167.9	149.8	139.8	63.1	17.0	27.0	74.4	3.3	< 9.7	160.3	95.0	123.0	7.6
09/09/98	4.7	40.9	11.7	24.1	59.5	20.6	14.2	70.4	2.0	< 9.7	33.7	24.0	20.4	17.1
16/09/98	5.7	48.2	14.3	43.5	58.6	38.2	103.7	64.9	3.9	< 9.7	41.1	19.0	1.8	1.7
23/09/98	3.7	326.9	349.4	384.7	61.5	17.1	67.2	70.5	5.1	< 9.7	319.5	159.0	218.8	4.8
30/09/98	4.5	60.1	43.7	37.5	179.9	44.0	12.2	201.3	4.3	< 9.7	38.4	52.0	34.7	46.9
07/10/98	5.0	43.0	20.3	30.6	106.9	34.8	19.7	121.3	2.8	< 9.7	30.2	29.0	8.9	14.2
14/10/98	4.5	48.0	17.2	30.6	69.9	18.3	9.3	87.4	2.1	< 9.7	39.6	31.0	30.2	41.1
21/10/98	4.8	25.3	9.2	14.7	37.7	13.3	7.1	44.3	1.3	< 9.7	20.8	16.0	15.1	46.6
28/10/98	4.4	51.8	25.8	16.5	154.6	38.0	9.6	183.8	3.7	< 9.7	33.2	50.0	41.7	28.7
04/11/98	4.8	35.6	19.3	34.4	51.1	16.3	8.1	58.2	2.2	< 9.7	29.4	23.0	17.0	22.5
11/11/98	4.5	36.8	20.1	14.3	78.1	20.7	8.1	93.2	1.7	< 9.7	27.4	27.0	32.4	38.0
18/11/98	4.3	78.6	96.9	130.7	32.3	9.4	20.4	48.3	1.7	< 9.7	74.7	50.0	47.9	5.9
25/11/98	4.4	94.2	58.0	120.5	39.6	10.6	14.8	70.4	1.4	< 9.7	89.4	44.0	43.7	6.7
02/12/98	4.3	63.1	24.6	33.0	177.1	43.5	12.3	218.1	3.9	< 9.7	41.7	57.0	44.7	24.1
09/12/98	4.3	52.5	40.4	59.9	40.1	10.4	6.8	69.3	< 1.3	< 9.7	47.6	40.0	44.7	17.2
16/12/98	4.6	63.1	25.9	41.4	177.9	49.1	25.6	212.7	4.2	< 9.7	41.7	50.0	22.9	9.9
23/12/98	4.9	103.9	14.9	45.0	598.0	150.0	38.3	691.9	11.9	< 9.7	31.8	112.0	12.0	16.3
30/12/98	4.4	74.7	53.0	66.4	104.4	27.3	25.6	123.3	2.7	< 9.7	62.1	48.0	38.9	17.8
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5009	4.5	62.1	36.4	45.1	105.9	29.7	20.3	125.8	2.8	< 9.7	49.4	41.4	34.6	979.9

Bannisdale

1998

Site Code:	5111
Easting:	3515
Northing:	5043
Latitude :	54 25 54 N
Longitude:	2 44 52 W
Altitude (m):	265
Rainfall (mm):	1972

Site environment:

Open moorland, sheep grazing

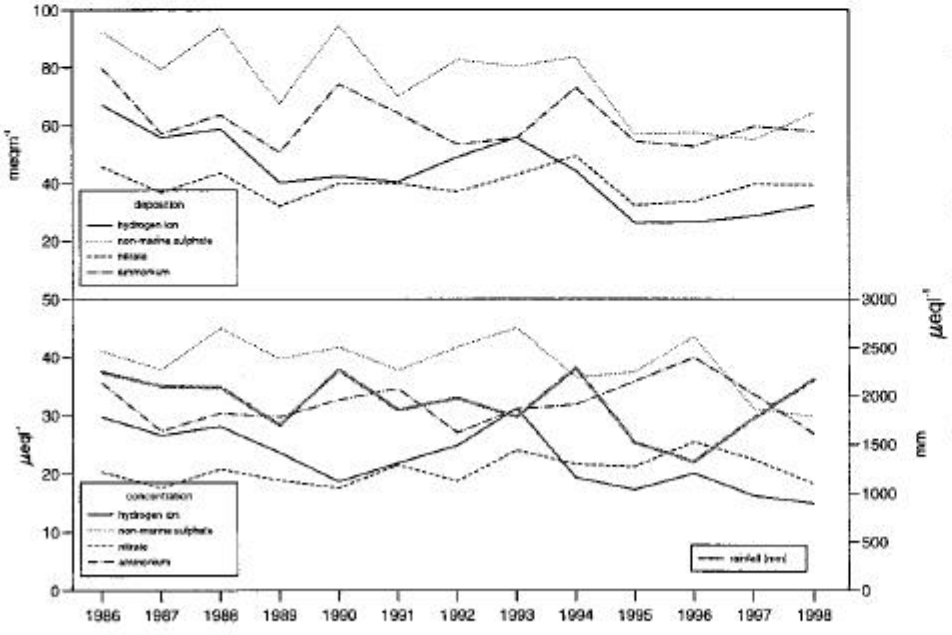
Other measurements:

DT

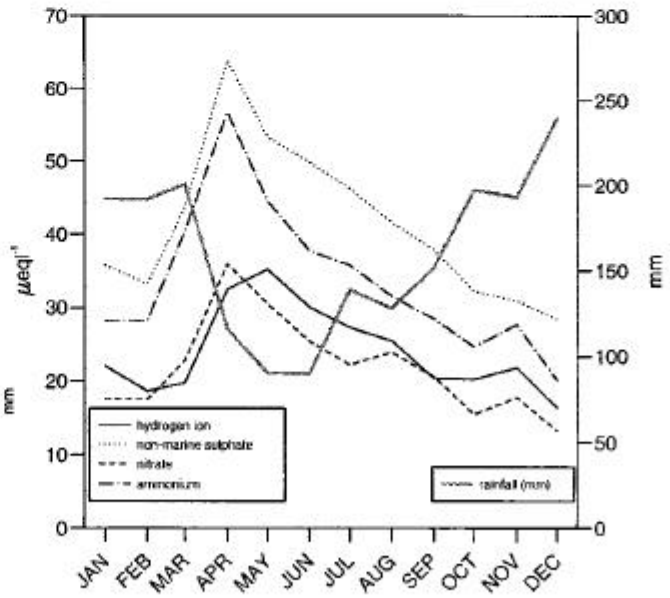
Site operator:

Institute of Freshwater Ecology

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	4.9	43.3	15.0	17.8	175.6	55.1	21.0	199.6	3.0	< 9.7	22.1	40.0	12.3	77.1
13/01/98	4.8	32.4	11.1	16.5	94.4	32.8	11.0	105.8	1.5	< 9.7	21.0	27.0	15.1	68.6
20/01/98	4.4	73.7	55.8	71.6	37.5	10.3	15.6	52.2	< 1.3	< 9.7	69.2	38.0	41.7	6.8
27/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/02/98	5.4	61.4	19.1	39.4	240.5	82.1	26.3	255.4	4.1	< 9.7	32.4	50.0	3.7	45.4
10/02/98	6.3	43.1	15.5	17.0	77.9	30.0	68.4	82.1	5.2	< 9.7	33.7	24.0	.5	84.0
17/02/98	4.9	71.9	55.9	87.4	87.4	27.3	28.6	101.3	2.5	< 9.7	61.3	38.0	13.8	15.1
24/02/98	5.1	28.7	7.6	13.7	95.9	39.4	14.7	114.3	1.8	< 9.7	17.1	24.0	8.1	68.7
03/03/98	4.7	30.6	12.9	11.8	66.0	21.9	11.3	73.9	< 1.3	< 9.7	22.7	25.0	19.5	68.6
10/03/98	5.0	40.9	25.8	46.4	48.1	19.3	21.4	54.5	< 1.3	< 9.7	35.1	23.0	9.8	29.2
17/03/98	7.8	285.1	154.0	270.5	252.2	84.9	1263.6	248.0	3.6	< 9.7	254.7	152.0	.0	4.9
24/03/98	4.7	46.5	33.2	54.5	19.0	8.9	8.8	23.4	< 1.3	< 9.7	44.2	24.0	21.9	69.0
31/03/98	4.4	45.7	28.1	21.3	27.8	8.8	7.9	33.4	< 1.3	< 9.7	42.4	30.0	38.9	44.6
07/04/98	4.3	98.1	48.5	29.6	336.5	79.3	38.6	367.7	7.4	< 9.7	57.6	68.0	50.1	9.8
15/04/98	4.6	81.0	77.0	113.0	62.3	18.9	24.3	67.9	3.3	< 9.7	73.5	44.0	26.3	12.1
21/04/98	4.5	62.0	39.7	54.2	45.3	14.2	12.5	50.4	< 1.3	< 9.7	56.6	34.0	33.9	53.5
28/04/98	5.8	54.5	26.8	39.3	102.6	41.2	83.7	109.9	3.6	< 9.7	42.2	28.0	1.7	5.7
05/05/98	4.9	45.4	23.2	38.1	46.4	24.4	41.5	50.6	1.4	< 9.7	39.8	22.0	11.7	44.7
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	5.9	50.9	35.8	49.4	21.8	21.9	131.8	22.1	16.6	< 9.7	48.3	19.0	1.1	2.7
26/05/98	4.4	59.4	50.5	56.5	13.1	5.3	27.6	17.9	< 1.3	< 9.7	57.8	32.0	36.3	18.0
02/06/98	4.7	28.0	14.5	12.8	9.4	4.3	6.0	13.3	< 1.3	< 9.7	26.9	16.0	22.4	97.2
09/06/98	4.6	38.4	17.2	16.6	61.5	18.3	9.4	69.2	1.4	< 9.7	31.0	27.0	25.1	30.7
16/06/98	4.9	31.2	18.6	22.3	14.2	6.2	18.2	17.0	< 1.3	< 9.7	29.5	14.0	12.0	23.8
23/06/98	4.8	31.6	13.6	23.7	23.0	7.5	5.8	26.5	< 1.3	< 9.7	28.9	16.0	15.1	67.9
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/07/98	5.0	25.5	8.0	12.8	28.9	10.0	13.7	33.1	2.6	< 9.7	22.0	13.0	9.5	43.2
14/07/98	5.2	36.7	15.2	36.8	40.9	15.6	10.1	45.6	< 1.3	< 9.7	31.8	18.0	6.3	61.4
21/07/98	4.6	51.8	19.8	36.9	53.0	15.6	9.8	58.1	2.1	< 9.7	45.4	25.0	24.0	41.2
28/07/98	4.9	18.2	7.2	12.8	14.6	5.7	5.6	18.2	< 1.3	< 9.7	16.5	10.0	12.6	63.7
04/08/98	4.7	76.5	28.8	53.6	70.9	24.6	22.9	75.1	1.9	< 9.7	67.9	34.0	21.4	24.1
11/08/98	5.2	40.0	13.7	31.2	82.0	34.2	24.6	92.9	2.4	< 9.7	30.2	23.0	6.2	45.3
18/08/98	5.0	41.4	15.7	29.5	103.6	38.2	24.9	115.6	2.3	< 9.7	28.9	27.0	8.9	26.6
25/08/98	4.2	84.4	48.5	56.1	5.8	< 4.1	7.2	12.5	1.7	< 9.7	83.7	43.0	64.6	24.6
01/09/98	4.9	36.7	26.0	38.5	20.2	8.4	15.8	25.0	1.3	< 9.7	34.2	18.0	13.5	43.4
08/09/98	4.9	31.7	9.6	17.1	63.5	23.9	9.6	72.1	1.5	< 9.7	24.0	20.0	12.0	41.2
15/09/98	4.5	67.9	34.1	46.0	85.4	27.2	30.4	95.1	2.5	< 9.7	57.6	34.0	28.8	7.5
23/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29/09/98	4.1	183.0	183.6	178.7	238.1	57.8	63.4	257.5	8.6	< 9.7	154.3	101.0	75.9	3.3
06/10/98	4.9	38.7	13.2	21.0	114.7	35.2	14.5	132.7	2.4	< 9.7	24.9	30.0	12.6	27.9
13/10/98	5.0	19.3	5.9	8.9	43.9	16.6	7.2	50.6	< 1.3	< 9.7	14.1	14.0	10.0	112.4
20/10/98	5.0	29.4	6.6	11.7	111.7	36.4	10.5	128.7	2.7	< 9.7	16.0	27.0	9.3	171.2
27/10/98	5.0	53.2	6.9	7.1	332.9	89.4	24.6	365.6	7.0	< 9.7	13.0	63.0	10.5	69.1
03/11/98	5.0	45.9	13.6	23.4	216.1	66.7	20.6	244.8	4.8	< 9.7	19.8	39.0	9.8	67.6
10/11/98	5.0	34.0	15.4	23.7	89.3	28.1	12.4	102.0	2.1	< 9.7	23.2	25.0	11.2	22.9
17/11/98	4.6	52.0	59.5	79.0	38.8	10.6	11.0	43.2	1.4	< 9.7	47.4	34.0	24.5	29.8
24/11/98	4.8	32.2	16.2	24.4	51.8	17.5	5.6	59.9	< 1.3	< 9.7	25.9	21.0	14.8	41.4
01/12/98	4.5	41.0	40.1	52.3	13.3	< 4.1	3.4	22.6	< 1.3	< 9.7	39.4	27.0	30.9	26.8
08/12/98	4.8	33.8	17.4	25.9	68.9	22.8	8.8	79.9	1.4	< 9.7	25.5	24.0	14.8	71.7
15/12/98	5.0	52.9	25.4	38.1	141.5	45.2	29.0	161.9	3.1	< 9.7	35.8	34.0	9.1	17.8
22/12/98	5.0	69.0	12.3	22.5	384.8	107.2	27.9	435.2	8.0	< 9.7	22.6	74.0	10.0	134.3
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5111	4.9	42.0	18.2	26.8	101.2	32.3	20.1	114.3	2.4	< 9.7	29.8	30.0	15.0	2166.6

Hillsborough Forest

1998

Site Code:	5149
Easting:	1349
Northing:	5156
Latitude :	54 27 09 N
Longitude:	6 05 03 W
Altitude (m):	120
Rainfall (mm):	863

Site environment:

Open arable, cows graze in summer

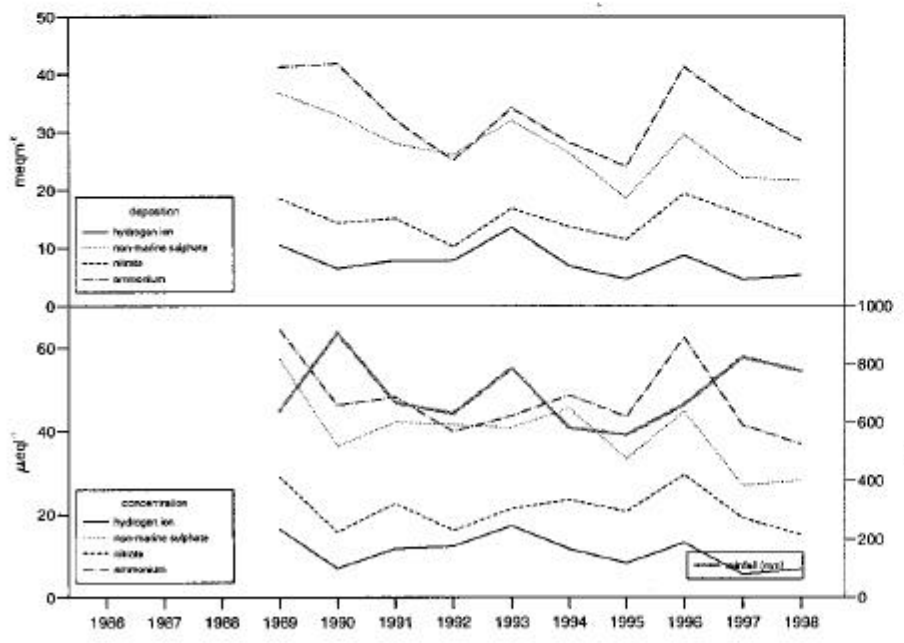
Other measurements:

DT

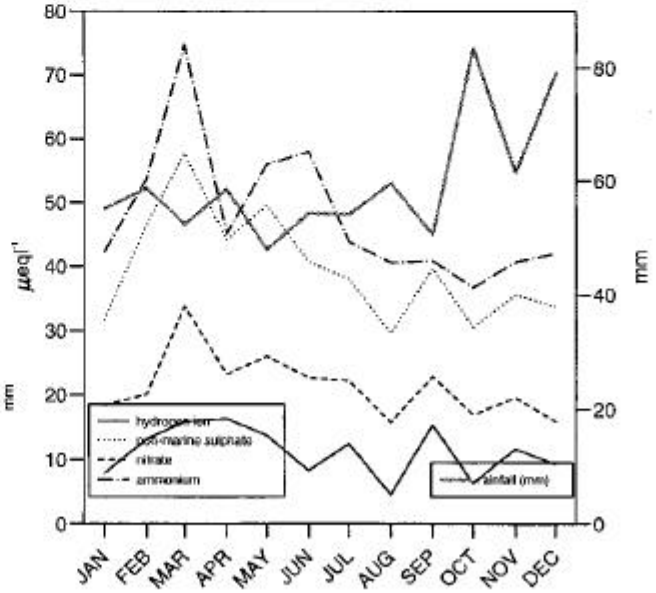
Site operator:

Department of Agriculture NI

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql⁻¹)



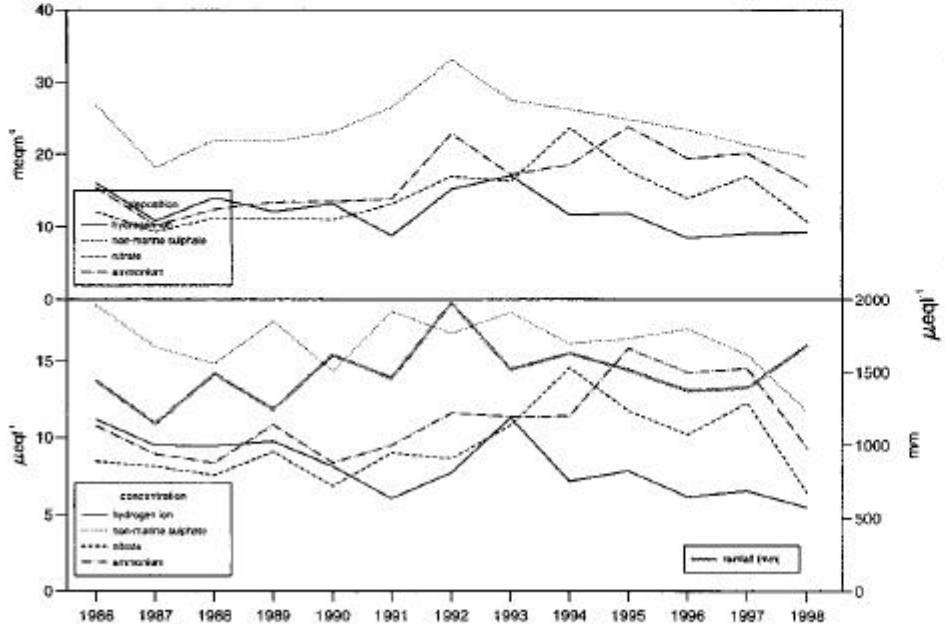
start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
08/01/98	5.5	23.3	8.9	21.0	57.5	32.2	20.5	66.4	< 1.3	< 9.7	16.3	15.0	3.1	19.6
15/01/98	5.5	35.7	11.8	29.1	100.3	47.3	32.3	113.9	1.5	< 9.7	23.6	24.0	3.0	17.3
22/01/98	5.6	37.2	29.0	52.0	21.7	10.5	28.2	26.0	2.9	< 9.7	34.6	-	2.5	2.4
29/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
05/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3
12/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/02/98	7.1	287.8	82.9	137.9	565.7	141.8	577.8	633.1	17.9	< 9.7	219.6	144.0	.1	1.5
26/02/98	6.2	32.9	3.6	28.9	120.7	57.1	44.8	142.1	2.5	< 9.7	18.3	28.0	.7	17.4
05/03/98	5.7	45.4	7.2	34.3	141.2	62.0	32.8	161.1	2.1	< 9.7	28.4	33.0	2.1	19.5
12/03/98	6.2	122.4	19.8	105.9	312.1	105.2	72.1	341.4	6.0	< 9.7	84.8	67.0	.6	1.6
19/03/98	6.3	25.0	11.3	36.5	25.4	32.0	76.5	27.4	< 1.3	< 9.7	22.0	13.0	.4	21.0
26/03/98	4.2	142.2	116.5	192.6	78.1	24.0	24.7	96.2	1.8	< 9.7	132.8	73.0	57.5	14.9
02/04/98	4.5	52.0	28.8	37.3	114.7	35.0	11.5	128.1	2.3	< 9.7	38.2	32.0	29.5	44.9
09/04/98	5.4	80.7	11.9	41.8	281.1	97.4	50.2	297.1	7.0	< 9.7	46.9	44.0	4.3	3.8
16/04/98	5.3	33.2	14.6	28.1	58.3	34.8	32.7	64.6	< 1.3	< 9.7	26.2	19.0	5.4	14.6
23/04/98	6.1	24.1	8.4	33.8	52.2	49.6	50.2	55.9	1.9	< 9.7	17.9	16.0	.9	18.6
30/04/98	6.2	32.3	11.3	48.3	34.8	39.3	39.4	35.9	< 1.3	< 9.7	28.1	16.0	.7	11.1
07/05/98	6.1	225.0	155.2	193.1	152.7	92.4	571.2	170.1	23.1	< 9.7	206.6	79.0	.8	3.9
14/05/98	4.3	152.0	96.3	171.7	8.0	< 4.1	24.9	17.3	1.8	< 9.7	151.1	55.0	55.0	1.6
21/05/98	-	-	-	-	-	-	-	-	-	-	-	.0	-	.9
28/05/98	4.8	89.9	48.8	95.9	51.8	17.0	16.7	61.9	< 1.3	< 9.7	83.6	40.0	14.1	13.2
04/06/98	5.0	33.6	23.4	39.9	21.5	12.3	15.5	24.9	< 1.3	< 9.7	31.0	17.0	11.0	32.9
11/06/98	5.6	31.7	13.7	31.9	53.2	24.0	20.4	55.4	< 1.3	< 9.7	25.3	17.0	2.3	7.3
18/06/98	6.3	41.5	27.1	66.0	20.4	14.0	51.9	23.7	4.2	< 9.7	39.1	17.0	.5	22.0
25/06/98	5.4	26.0	6.7	25.3	14.2	7.9	14.8	19.1	< 1.3	< 9.7	24.2	< 10.0	4.3	24.7
03/07/98	6.2	48.1	18.1	45.0	42.5	34.9	96.4	41.1	6.0	< 9.7	43.0	17.0	.7	2.8
09/07/98	6.0	13.1	< 2.1	21.7	27.4	33.7	61.2	31.5	< 1.3	< 9.7	9.8	< 10.0	.9	24.4
16/07/98	6.4	22.5	< 2.1	134.4	16.8	96.3	47.5	31.6	38.5	73.4	20.4	26.0	.4	45.5
23/07/98	5.1	17.0	4.4	5.1	18.1	21.6	22.4	23.4	< 1.3	< 9.7	14.9	10.0	7.6	13.1
30/07/98	5.4	13.1	< 2.1	< 2.1	26.4	24.4	28.2	33.2	< 1.3	< 9.7	9.9	< 10.0	4.3	17.2
06/08/98	6.2	20.3	6.6	25.6	23.3	33.9	120.2	27.5	1.9	< 9.7	17.5	10.0	.7	18.6
13/08/98	5.5	25.8	7.9	22.0	38.2	22.5	30.4	43.3	1.8	< 9.7	21.2	14.0	3.4	15.1
20/08/98	4.9	30.6	9.1	15.8	27.0	14.8	42.6	31.1	3.5	< 9.7	27.3	16.0	11.7	16.5
27/08/98	5.1	94.5	90.8	114.8	93.9	33.2	66.2	102.5	8.9	< 9.7	83.2	45.0	7.6	3.7
03/09/98	5.7	26.6	9.1	24.0	87.0	34.3	18.6	100.5	2.3	< 9.7	16.1	21.0	2.2	-
10/09/98	5.5	19.1	2.2	14.7	52.3	30.0	19.4	58.3	2.1	< 9.7	12.8	14.0	2.8	23.5
17/09/98	4.4	196.5	26.7	46.1	181.4	47.5	43.9	194.8	4.5	< 9.7	174.7	56.0	43.7	1.2
24/09/98	4.0	130.3	109.9	93.4	78.9	20.7	24.6	91.3	2.4	< 9.7	120.8	75.0	93.3	8.2
01/10/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/10/98	6.5	34.2	5.1	69.5	98.3	45.5	22.7	116.1	3.4	< 9.7	22.4	28.0	.3	22.3
15/10/98	5.8	16.8	3.0	20.3	52.1	29.1	14.3	59.1	1.4	< 9.7	10.6	14.0	1.5	30.9
22/10/98	5.9	18.8	< 2.1	10.1	90.6	38.3	17.4	104.4	7.3	< 9.7	7.9	22.0	1.2	47.3
29/10/98	5.4	29.0	8.2	22.1	81.5	35.1	13.0	96.1	2.1	< 9.7	19.2	21.0	3.9	24.1
05/11/98	5.7	38.1	6.6	18.0	217.0	75.3	28.2	244.6	5.1	< 9.7	11.9	36.0	1.9	21.3
12/11/98	5.4	46.9	23.5	44.8	55.2	28.6	38.9	64.2	4.8	< 9.7	40.3	19.0	4.1	12.0
19/11/98	6.2	30.4	12.8	38.1	70.3	35.2	23.6	76.4	2.3	< 9.7	21.9	20.0	.7	10.0
26/11/98	6.1	94.5	32.3	138.2	69.9	36.4	23.1	82.9	2.0	< 9.7	86.1	35.0	.9	7.9
03/12/98	6.4	36.7	7.1	52.2	69.9	38.5	22.3	78.9	2.3	< 9.7	28.3	19.0	.4	7.3
10/12/98	6.5	20.5	< 2.1	96.8	77.6	76.4	19.8	69.7	645.3	115.5	11.1	85.0	.3	18.8
17/12/98	5.8	43.4	8.2	46.4	62.2	32.7	24.8	72.7	5.7	< 9.7	35.9	21.0	1.6	11.0
23/12/98	5.5	63.7	9.0	30.6	415.7	135.6	41.1	459.9	9.6	< 9.7	13.6	67.0	3.1	56.3
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5149	5.6	40.8	16.1	38.3	97.3	42.2	36.5	110.0	3.2	< 1.8	29.1	26.1	7.2	777.2

Lough Navar
1998

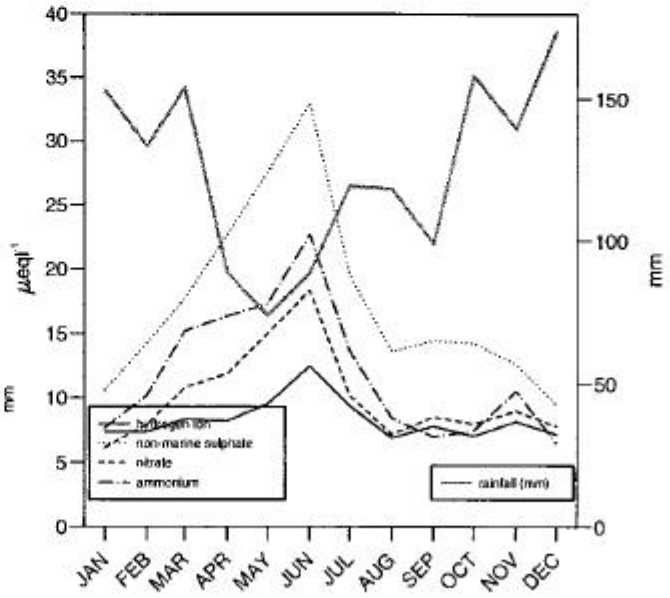
Site Code:	5006
Easting:	192
Northing:	5212
Latitude :	54 26 20 N
Longitude:	7 54 00 W
Altitude (m):	130
Rainfall (mm):	1412

Site environment:
Clearing near Forestry Offices
Other measurements:
WOC, DT, Daily SO_2, ozone, EMEP
Site operator:
Forestry Service NI

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
05/01/98	5.1	27.3	7.4	10.8	95.9	36.5	16.1	110.8	1.9	< 9.7	15.8	24.0	7.6	39.9
12/01/98	5.3	15.6	5.0	8.2	56.6	29.1	9.1	62.7	< 1.3	< 9.7	8.8	14.0	4.9	54.0
19/01/98	5.5	14.1	19.3	14.2	11.2	10.8	31.2	16.3	< 1.3	< 9.7	12.7	< 10.0	3.2	26.8
26/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.7
02/02/98	5.5	28.2	3.6	10.0	140.3	56.7	21.6	162.6	1.9	< 9.7	11.3	28.0	3.3	21.1
09/02/98	6.2	31.8	10.4	9.0	68.0	23.5	106.1	63.6	1.3	< 9.7	23.6	18.0	.6	21.0
16/02/98	5.8	20.3	3.6	12.6	70.7	38.3	37.9	79.3	1.4	< 9.7	11.8	16.0	1.5	19.4
23/02/98	5.8	54.5	3.1	3.4	407.8	142.5	49.7	472.4	8.0	< 9.7	5.3	73.0	1.8	33.6
02/03/98	5.4	20.8	5.1	7.4	93.4	47.3	21.4	107.7	1.8	< 9.7	9.5	21.0	4.2	44.7
09/03/98	5.9	35.6	2.9	7.4	245.1	90.0	36.8	262.8	4.7	< 9.7	6.0	45.0	1.4	19.4
16/03/98	5.3	34.1	8.8	31.0	93.9	42.0	70.3	107.7	2.9	< 9.7	22.7	-	5.0	2.0
23/03/98	5.0	30.4	18.5	28.7	31.6	16.2	25.9	33.9	< 1.3	< 9.7	26.6	16.0	8.9	34.3
30/03/98	4.4	52.1	42.8	45.6	23.2	7.2	8.3	28.4	< 1.3	< 9.7	49.3	34.0	40.7	32.7
06/04/98	4.9	26.9	8.4	6.5	114.8	42.6	21.5	133.7	2.7	< 9.7	13.1	28.0	11.7	26.8
13/04/98	5.9	16.3	4.8	7.5	56.7	42.6	43.5	61.6	1.5	< 9.7	9.5	14.0	1.3	26.0
20/04/98	5.5	12.6	3.8	9.4	27.0	32.5	50.0	30.4	< 1.3	< 9.7	9.3	< 10.0	3.1	37.7
27/04/98	5.7	18.6	11.1	19.7	14.7	16.0	58.8	17.9	< 1.3	< 9.7	16.8	< 10.0	2.2	21.0
04/05/98	5.5	14.0	5.3	7.2	39.9	34.5	42.8	47.1	1.3	< 9.7	9.2	11.0	3.0	39.0
11/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
25/05/98	5.5	64.1	34.3	65.5	86.9	37.3	81.4	93.0	6.0	< 9.7	53.6	29.0	2.8	7.5
01/06/98	6.0	33.1	31.2	42.7	13.9	11.0	67.8	17.1	< 1.3	< 9.7	31.4	15.0	1.1	26.3
08/06/98	5.4	15.8	4.9	6.6	36.8	19.3	34.4	39.5	< 1.3	< 9.7	11.4	10.0	4.3	38.3
15/06/98	6.2	29.6	18.5	30.9	16.0	13.3	89.6	20.5	< 1.3	< 9.7	27.6	13.0	.7	16.4
22/06/98	5.0	14.8	2.7	< 2.1	29.4	11.7	10.3	33.7	< 1.3	< 9.7	11.2	11.0	10.2	50.9
29/06/98	6.5	41.8	5.7	22.2	65.9	37.2	69.4	73.0	10.9	< 9.7	33.9	20.0	.3	6.9
06/07/98	5.4	14.7	4.3	6.6	36.3	19.3	15.2	43.6	< 1.3	< 9.7	10.3	10.0	3.7	34.3
13/07/98	5.2	14.8	< 2.1	4.1	42.7	18.1	9.8	48.4	< 1.3	< 9.7	9.6	12.0	6.0	70.1
20/07/98	6.1	14.0	2.6	8.1	28.8	24.5	73.3	32.5	< 1.3	< 9.7	10.5	10.0	.7	38.5
27/07/98	5.0	13.1	3.5	< 2.1	28.6	11.3	10.6	31.3	< 1.3	< 9.7	9.7	10.0	9.3	61.2
03/08/98	5.5	14.3	3.6	4.6	49.6	25.8	25.2	56.2	1.4	< 9.7	8.3	12.0	3.5	17.6
10/08/98	5.0	21.5	5.7	6.4	55.0	21.2	16.5	62.8	1.6	< 9.7	14.9	17.0	11.2	37.3
17/08/98	5.0	20.3	4.1	< 2.1	77.1	29.6	12.4	90.1	1.6	< 9.7	11.0	19.0	11.0	27.5
24/08/98	5.5	19.3	5.7	10.8	13.1	6.9	42.9	16.9	1.4	< 9.7	17.8	< 10.0	3.0	8.4
31/08/98	6.0	31.3	20.3	40.8	62.3	56.5	88.8	66.9	2.4	< 9.7	23.7	19.0	.9	28.3
07/09/98	5.6	20.8	< 2.1	4.2	135.8	55.1	18.2	155.8	2.8	< 9.7	4.5	26.0	2.5	77.9
14/09/98	5.5	18.6	5.6	6.1	51.9	26.7	39.0	57.1	2.0	< 9.7	12.3	14.0	3.5	9.2
21/09/98	5.3	229.4	255.5	142.7	35.0	30.2	694.0	36.6	4.0	< 9.7	225.2	-	5.0	1.5
28/09/98	4.1	150.3	115.2	127.3	62.2	16.0	23.5	62.3	2.2	< 9.7	142.8	71.0	83.2	4.5
05/10/98	5.6	25.5	3.8	8.1	154.2	53.6	25.0	176.7	3.1	< 9.7	6.9	29.0	2.4	19.2
12/10/98	5.4	20.0	< 2.1	2.8	142.4	51.4	16.6	165.8	3.1	< 9.7	2.8	27.0	4.4	57.2
19/10/98	5.3	14.5	< 2.1	2.1	84.0	36.7	14.4	92.5	1.9	< 9.7	4.4	18.0	4.6	106.8
26/10/98	5.5	33.2	< 2.1	< 2.1	244.7	77.9	21.6	273.5	5.1	< 9.7	3.7	44.0	3.2	107.8
02/11/98	5.3	35.6	3.7	4.4	231.1	75.7	25.7	256.0	5.2	< 9.7	7.8	43.0	4.6	39.9
09/11/98	5.5	36.3	< 2.1	3.2	265.3	81.2	23.0	296.7	5.3	< 9.7	4.3	42.0	3.2	38.8
16/11/98	5.4	10.4	6.0	7.9	8.5	7.3	10.2	12.7	< 1.3	< 9.7	9.3	< 10.0	4.4	39.8
23/11/98	5.1	31.0	4.6	4.6	149.9	51.2	17.4	177.5	3.7	< 9.7	12.9	31.0	7.9	32.0
30/11/98	5.4	25.3	16.6	14.6	68.9	21.2	22.0	77.7	5.3	< 9.7	17.0	18.0	4.3	7.5
07/12/98	5.4	20.0	3.6	7.1	93.9	39.7	15.4	110.3	1.7	< 9.7	8.7	20.0	3.7	29.7
14/12/98	5.4	28.7	4.4	9.6	129.1	55.1	25.5	149.4	3.0	< 9.7	13.1	27.0	3.6	25.2
21/12/98	5.6	164.7	< 2.1	7.4	1325.0	449.7	78.3	1516.7	28.1	< 9.7	5.1	212.0	2.3	51.6
28/12/98	5.3	25.5	4.2	10.2	128.9	55.3	18.9	147.8	3.0	< 9.7	9.9	27.0	5.1	66.6
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5006	5.4	28.1	6.4	9.3	136.4	52.7	29.3	155.1	3.0	< 9.7	11.7	27.9	5.5	1685.9

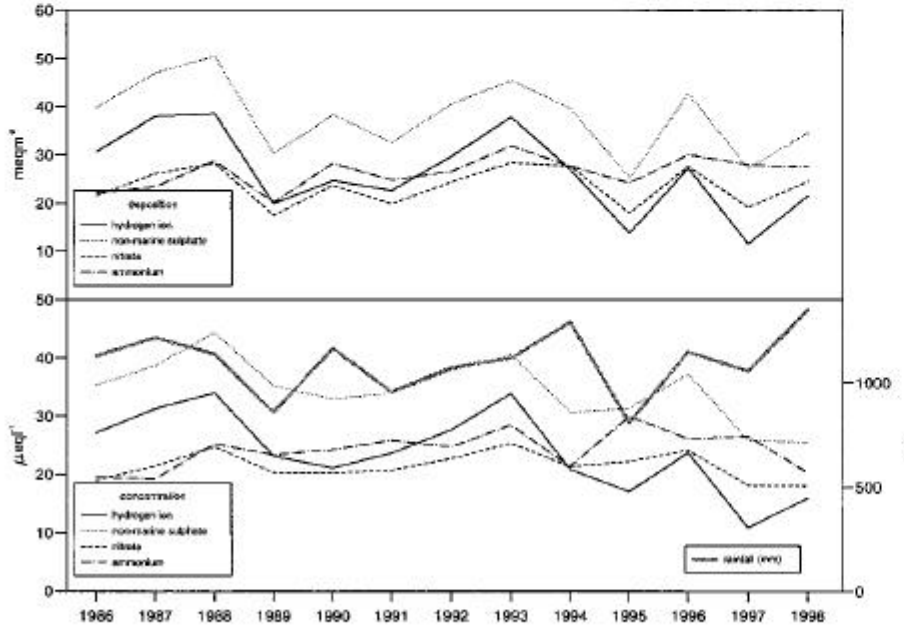
Cow Green Reservoir

1998

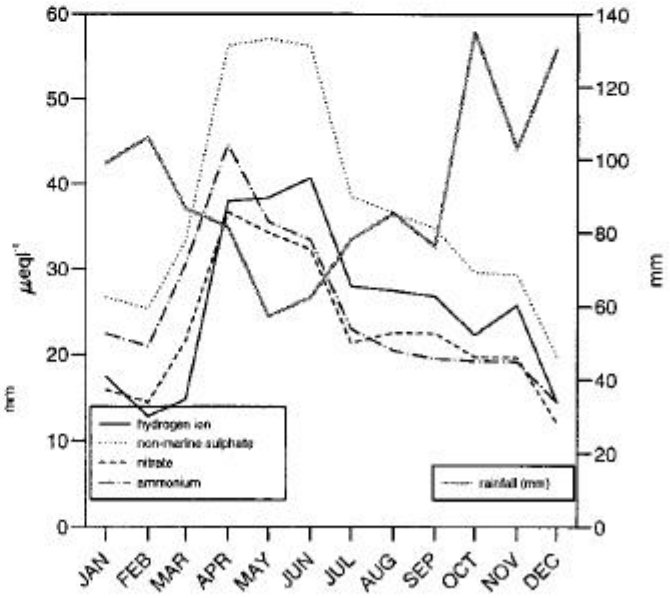
Site Code:	5113
Easting:	3817
Northing:	5298
Latitude :	54 39 46 N
Longitude:	2 17 01 W
Altitude (m):	510
Rainfall (mm):	2175

Site environment:
Very open moorland
Other measurements:
DT, Met
Site operator:
English Nature

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	5.2	52.7	36.6	19.3	237.2	72.3	46.5	242.5	5.6	< 9.7	24.1	44.0	5.9	6.6
14/01/98	5.2	36.0	13.5	16.1	152.3	53.5	30.6	168.8	2.6	< 9.7	17.6	30.0	5.9	2.3
21/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
28/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
04/02/98	5.7	37.9	14.1	34.8	111.9	49.2	31.1	120.3	1.6	< 9.7	24.4	24.0	1.8	7.2
12/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/02/98	6.4	81.2	31.5	66.8	326.1	102.7	57.8	369.2	7.2	< 9.7	41.9	70.0	.4	9.1
27/02/98	5.7	44.8	9.9	15.4	232.9	70.0	53.2	251.5	4.7	< 9.7	16.7	41.0	2.1	2.5
06/03/98	4.8	32.4	12.4	8.9	31.3	10.9	18.6	32.6	2.1	< 9.7	28.7	17.0	15.8	5.6
13/03/98	5.1	67.2	48.9	53.3	122.8	41.3	53.7	139.2	4.5	< 9.7	52.4	38.0	7.9	2.2
25/03/98	4.6	48.6	39.5	49.9	26.5	10.7	12.4	31.6	1.6	< 9.7	45.4	27.0	25.7	17.6
02/04/98	4.3	48.4	29.4	21.5	38.7	11.4	8.6	46.9	< 1.3	< 9.7	43.8	33.0	46.8	76.1
15/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/04/98	4.5	59.6	36.3	35.8	116.4	31.9	16.7	135.6	2.2	< 9.7	45.6	43.0	30.9	78.0
29/04/98	5.2	39.9	31.6	39.2	58.1	27.7	43.0	59.2	1.6	< 9.7	32.9	23.0	6.3	43.0
06/05/98	6.0	72.9	44.4	72.2	95.3	42.9	85.0	99.4	5.1	< 9.7	61.4	34.0	1.0	16.7
21/05/98	4.9	47.8	36.7	27.6	28.2	10.9	24.1	28.5	< 1.3	< 9.7	44.4	28.0	11.7	30.7
04/06/98	4.6	37.9	17.9	20.3	33.5	11.8	8.5	37.1	1.3	< 9.7	33.9	23.0	25.1	73.1
18/06/98	4.9	36.3	16.8	23.4	33.5	10.7	19.1	35.9	1.6	< 9.7	32.3	18.0	12.9	40.9
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
08/07/98	5.6	28.3	14.3	25.3	57.1	24.2	24.5	61.0	< 1.3	< 9.7	21.4	17.0	2.5	15.7
15/07/98	4.8	25.2	11.5	16.1	30.9	10.2	7.6	34.6	< 1.3	< 9.7	21.5	16.0	16.6	66.5
29/07/98	5.0	16.2	8.2	8.1	15.3	7.6	8.8	19.4	< 1.3	< 9.7	14.4	10.0	10.0	39.1
05/08/98	5.2	36.6	14.1	29.7	21.7	11.7	25.4	24.3	< 1.3	< 9.7	33.9	14.0	6.8	27.5
12/08/98	5.1	29.8	11.9	21.6	59.7	24.5	15.6	65.5	2.1	< 9.7	22.6	19.0	8.3	22.4
19/08/98	4.8	31.9	18.3	22.3	26.6	9.6	9.9	30.4	< 1.3	< 9.7	28.7	18.0	17.0	104.1
09/09/98	5.1	15.6	8.1	7.1	30.4	14.1	14.3	33.9	1.4	< 9.7	11.9	12.0	8.1	30.7
16/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
23/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/10/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/10/98	5.2	18.4	5.1	6.7	71.9	28.8	10.8	81.4	1.4	< 9.7	9.7	18.0	6.6	251.4
21/10/98	4.8	26.6	10.5	8.9	68.2	20.7	7.3	80.4	1.5	< 9.7	18.4	23.0	17.0	52.3
28/10/98	4.2	87.6	76.1	70.5	82.0	20.7	13.3	91.6	2.3	< 9.7	77.7	57.0	57.5	34.4
04/11/98	5.5	38.5	7.5	12.0	238.0	73.3	25.4	261.6	5.5	< 9.7	9.8	45.0	3.5	32.0
11/11/98	4.7	25.2	23.2	14.6	44.5	13.0	4.7	50.2	< 1.3	< 9.7	19.8	23.0	22.4	28.8
18/11/98	4.6	40.7	42.6	43.3	37.8	11.0	10.2	38.5	< 1.3	< 9.7	36.1	23.0	27.5	15.7
25/11/98	5.0	19.0	9.9	8.9	45.4	18.2	9.1	48.9	1.5	< 9.7	13.6	14.0	9.5	34.9
02/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	5.9
09/12/98	5.0	26.3	11.0	14.6	80.3	29.5	13.0	88.8	1.6	< 9.7	16.6	21.0	9.8	33.6
16/12/98	4.8	61.8	31.3	45.5	111.9	32.8	20.4	127.8	2.9	< 9.7	48.3	37.0	16.2	12.6
23/12/98	5.0	53.7	9.6	12.8	331.1	96.0	26.1	368.2	6.6	< 9.7	13.8	63.0	10.2	131.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5113	4.9	36.4	18.1	20.4	89.4	29.4	16.3	100.0	2.0	< 9.7	25.6	27.9	16.0	1353.2

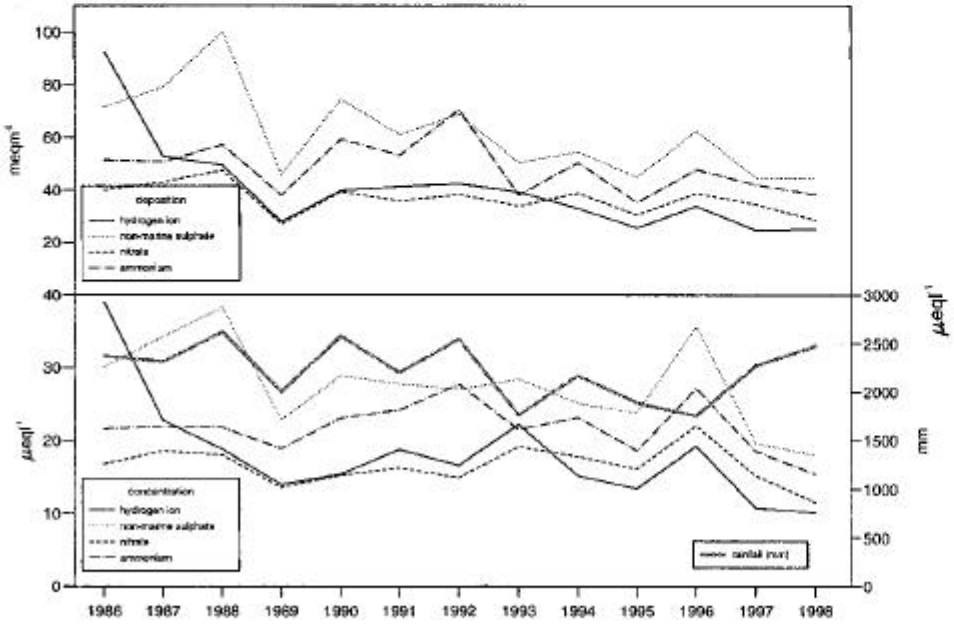
Loch Dee

1998

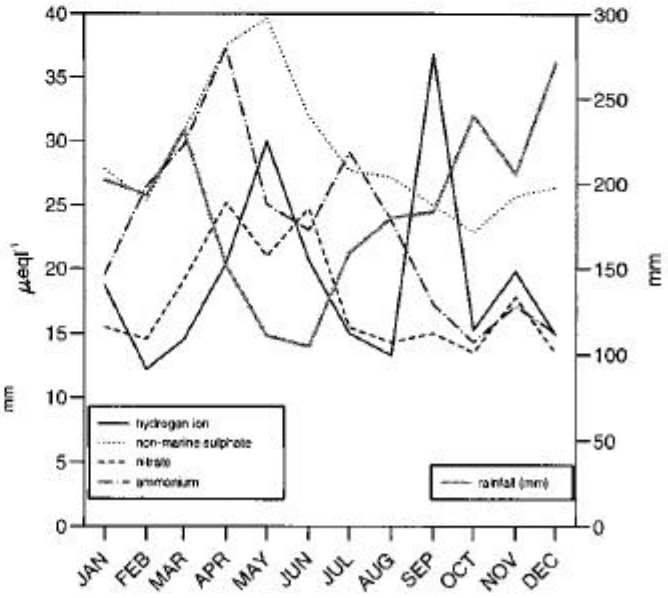
Site Code:	5107
Easting:	2468
Northing:	5779
Latitude :	55 04 19 N
Longitude:	4 23 59 W
Altitude (m):	230
Rainfall (mm):	1949

Site environment:
Open moorland
Other measurements:
DT
Site operator:
SEPA; West Region

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	4.8	30.0	17.1	11.9	115.1	37.0	14.5	122.1	2.3	< 9.7	16.1	29.0	15.8	63.4
14/01/98	4.9	35.0	22.8	19.7	103.1	35.1	12.6	117.1	2.0	< 9.7	22.6	29.0	13.5	64.9
22/01/98	4.6	29.4	24.5	23.6	14.3	< 4.1	7.3	16.2	< 1.3	< 9.7	27.7	21.0	27.5	11.5
28/01/98	4.6	67.4	35.3	52.2	128.5	37.0	12.6	149.2	2.5	< 9.7	52.0	45.0	26.9	13.3
05/02/98	6.0	35.7	12.8	40.3	106.0	56.6	28.9	114.1	1.7	< 9.7	22.9	25.0	1.1	89.8
12/02/98	6.8	94.6	52.5	61.9	167.8	54.6	472.3	176.2	7.0	< 9.7	74.4	60.0	.1	27.9
19/02/98	5.3	47.7	20.8	34.5	98.3	38.3	36.7	110.5	2.7	< 9.7	35.8	28.0	5.0	44.8
25/02/98	5.6	42.6	6.1	15.3	221.3	81.8	29.5	245.2	4.2	< 9.7	16.0	41.0	2.3	59.8
04/03/98	5.2	22.7	6.7	9.5	59.9	32.2	18.5	63.4	1.4	< 9.7	15.5	16.0	7.1	64.1
11/03/98	6.3	66.6	18.8	48.2	242.2	94.6	66.9	254.4	8.5	< 9.7	37.4	52.0	.5	8.8
18/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	25.9
25/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	71.4
01/04/98	7.0	152.8	16.9	2315.1	59.0	127.1	73.6	68.5	132.8	395.8	145.7	213.0	.1	72.9
09/04/98	6.3	144.9	38.6	463.5	166.9	52.4	98.4	150.7	108.4	421.3	124.8	61.0	.4	2.2
15/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	26.7
22/04/98	7.4	123.1	12.3	1284.8	92.9	114.4	63.8	105.2	99.5	315.3	112.0	158.0	.0	38.8
29/04/98	6.7	82.7	16.7	784.4	58.5	105.5	76.4	37.8	48.5	151.8	75.7	95.0	.2	27.2
06/05/98	7.1	251.3	17.1	1888.3	195.9	144.9	112.0	186.9	204.7	606.2	227.7	228.0	.1	21.2
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/05/98	8.0	524.2	33.0	3883.2	147.4	167.6	131.5	210.0	417.7	1191.2	506.5	429.0	.0	4.6
27/05/98	4.6	23.1	22.3	18.8	8.0	4.4	9.3	13.3	< 1.3	< 9.7	22.2	16.0	23.4	41.8
03/06/98	4.7	26.6	15.8	16.8	16.0	4.7	4.1	19.4	< 1.3	< 9.7	24.6	15.0	20.9	52.7
10/06/98	7.6	232.0	29.8	2449.2	78.5	131.0	80.4	54.5	233.5	871.8	222.5	319.0	.0	16.8
17/06/98	7.2	73.4	8.6	1222.5	34.6	91.4	53.0	32.7	48.5	152.4	69.3	122.0	.1	92.3
24/06/98	7.3	295.7	3.7	4884.1	107.0	185.7	147.5	119.2	254.9	818.9	282.8	468.0	.0	40.3
01/07/98	7.6	1123.1	2.8	7886.5	484.8	826.2	184.7	581.1	1006.2	3382.1	1064.7	977.0	.0	4.6
08/07/98	6.7	33.3	4.2	221.9	29.0	40.5	30.4	29.7	23.9	60.3	29.8	32.0	.2	72.7
15/07/98	6.3	34.9	7.4	84.7	33.8	56.4	36.8	35.2	13.8	45.6	30.8	20.0	.5	108.7
22/07/98	6.7	27.0	4.8	208.6	34.9	57.2	38.4	36.4	28.3	50.8	22.8	31.0	.2	67.0
29/07/98	5.3	16.2	3.8	5.0	54.1	27.6	12.0	61.6	1.3	< 9.7	9.7	13.0	5.4	82.9
05/08/98	6.2	22.6	4.9	46.6	21.1	53.3	54.4	25.3	7.7	12.3	20.0	12.0	.6	72.1
12/08/98	5.2	21.3	6.4	16.6	27.7	16.7	10.1	31.8	< 1.3	< 9.7	18.0	11.0	6.2	87.7
18/08/98	6.1	25.7	6.3	25.1	41.1	46.7	40.7	43.3	5.3	< 9.7	20.8	15.0	.8	64.4
26/08/98	4.5	41.0	37.5	46.0	5.1	< 4.1	5.2	11.6	< 1.3	< 9.7	40.4	23.0	28.2	38.9
02/09/98	5.2	20.1	9.9	13.8	41.8	20.9	13.5	44.2	1.4	< 9.7	15.1	13.0	6.9	73.4
09/09/98	5.1	19.8	4.7	3.9	73.1	30.1	10.3	81.3	2.0	< 9.7	11.0	19.0	8.5	66.0
23/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
30/09/98	4.5	48.1	44.3	33.5	44.2	11.4	9.2	44.9	2.4	< 9.7	42.8	32.0	35.5	19.3
09/10/98	5.3	28.1	2.2	6.9	169.5	56.8	16.9	188.0	3.3	< 9.7	7.7	33.0	5.2	53.7
14/10/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/10/98	5.3	18.8	2.5	4.5	98.7	39.5	12.7	112.0	2.2	< 9.7	7.0	21.0	4.5	127.6
28/10/98	5.2	24.9	2.9	6.5	145.8	50.3	14.3	171.5	3.4	< 9.7	7.3	30.0	6.6	83.0
04/11/98	5.0	57.1	14.0	17.3	299.5	81.3	21.9	328.2	6.4	< 9.7	21.1	52.0	9.8	43.6
12/11/98	4.7	35.6	26.6	23.0	104.9	29.1	9.7	124.0	2.4	< 9.7	22.9	28.0	21.9	24.9
18/11/98	4.7	37.4	24.3	21.3	122.1	33.5	8.2	142.0	2.6	< 9.7	22.7	36.0	22.4	126.7
25/11/98	5.2	21.6	6.5	8.0	68.6	27.7	10.2	75.6	2.0	< 9.7	13.3	17.0	7.1	80.5
01/12/98	4.9	17.7	8.9	8.6	36.8	16.0	6.9	39.9	< 1.3	< 9.7	13.2	13.0	12.3	34.5
09/12/98	5.1	16.9	5.5	5.3	53.2	23.5	8.4	56.3	< 1.3	< 9.7	10.5	14.0	8.5	100.3
16/12/98	5.2	42.2	12.1	24.3	136.3	52.3	26.9	169.1	23.6	16.4	25.8	35.0	5.8	49.6
23/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5107	5.2	29.5	12.5	16.8	91.2	35.3	23.0	101.7	2.3	59.8	18.5	24.0	10.0	2472.5

Redesdale

1998

Site Code:	5109
Easting:	3833
Northing:	5954
Latitude :	55 14 59 N
Longitude:	2 15 46 W
Altitude (m):	240
Rainfall (mm):	875

Site environment:

Open moorland, very open sheep farming land

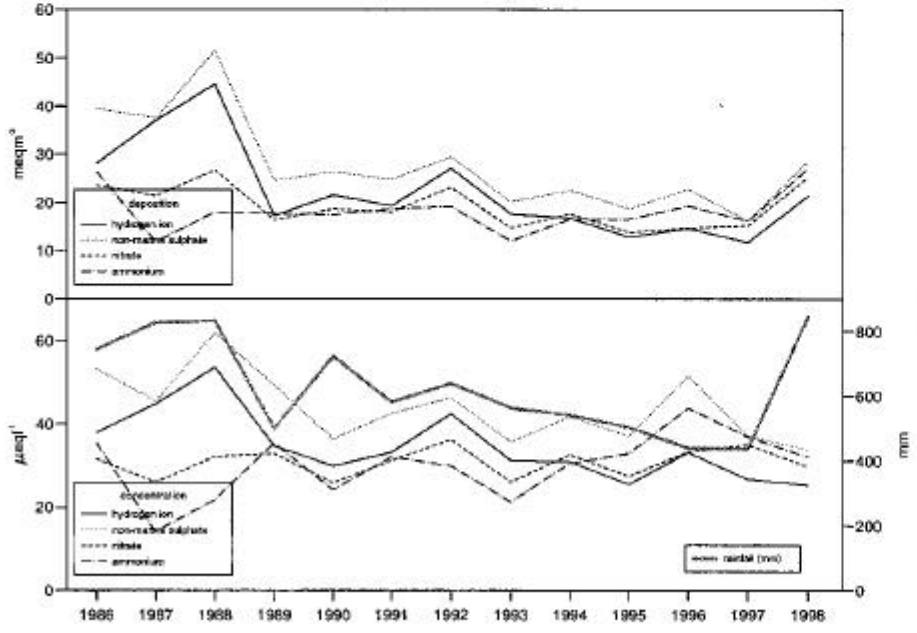
Other measurements:

DT

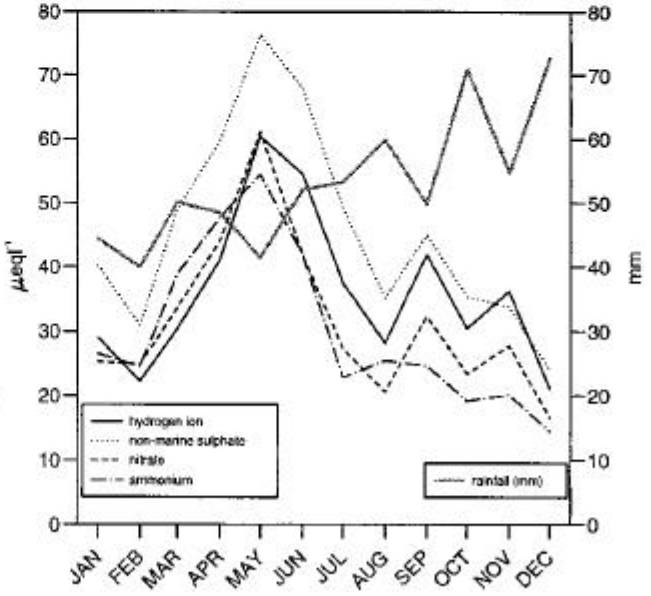
Site operator:

ADAS Redesdale

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	5.0	28.1	16.7	14.4	104.8	35.9	14.1	118.7	2.0	< 9.7	15.4	27.0	11.2	27.3
13/01/98	4.5	44.0	23.3	31.1	62.3	18.9	7.0	76.2	< 1.3	< 9.7	36.5	32.0	31.6	29.9
20/01/98	4.9	26.7	19.3	14.2	66.2	22.2	18.6	71.2	1.7	< 9.7	18.7	20.0	13.5	4.0
27/01/98	4.7	68.9	43.4	67.5	131.8	38.4	23.3	152.2	3.3	< 9.7	53.1	48.0	18.2	3.6
03/02/98	6.2	35.4	16.3	42.1	132.3	56.2	36.9	154.3	2.6	< 9.7	19.5	29.0	.6	3.5
10/02/98	6.0	34.6	26.2	34.3	62.6	24.8	82.3	61.2	1.4	< 9.7	27.1	18.0	1.0	4.7
17/02/98	5.6	36.9	40.9	52.1	94.8	35.3	55.6	101.9	3.0	< 9.7	25.5	26.0	2.8	2.3
24/02/98	5.8	33.3	9.6	17.1	161.7	64.9	33.5	181.0	5.0	< 9.7	13.8	31.0	1.5	9.3
03/03/98	4.8	31.2	20.6	15.8	88.2	27.5	10.2	100.3	2.0	< 9.7	20.6	25.0	17.4	19.4
10/03/98	4.9	18.5	16.3	16.3	15.3	8.3	9.0	19.9	< 1.3	< 9.7	16.6	13.0	13.2	17.2
17/03/98	5.3	105.9	98.9	93.0	121.4	37.0	51.7	132.9	5.3	< 9.7	91.3	-	5.0	1.6
24/03/98	4.6	64.3	68.8	104.9	16.7	7.6	19.5	24.6	< 1.3	< 9.7	62.3	33.0	23.4	18.1
31/03/98	4.4	48.7	29.8	20.3	88.5	25.2	7.9	103.3	3.1	< 9.7	38.0	38.0	38.0	61.1
07/04/98	4.5	76.2	36.6	25.6	324.7	80.7	21.6	342.8	8.1	< 9.7	37.1	72.0	35.5	9.7
14/04/98	4.5	56.3	48.2	42.8	105.1	30.0	10.2	121.2	2.5	< 9.7	43.7	46.0	33.9	25.5
21/04/98	4.4	52.7	47.7	50.7	19.1	6.6	11.3	25.4	< 1.3	< 9.7	50.4	32.0	39.8	30.6
28/04/98	4.1	94.9	104.1	87.8	29.9	5.4	14.7	40.4	15.3	< 9.7	91.3	58.0	79.4	10.7
05/05/98	5.0	75.0	56.2	80.9	49.8	24.9	76.3	52.9	3.2	< 9.7	69.1	31.0	10.2	22.6
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
26/05/98	4.7	40.0	36.3	53.6	23.3	12.2	11.8	28.5	< 1.3	< 9.7	37.2	22.0	18.6	39.0
02/06/98	4.4	47.3	32.2	29.3	29.5	9.1	5.3	34.0	< 1.3	< 9.7	43.8	31.0	40.7	36.2
09/06/98	4.5	39.5	27.6	27.5	25.1	7.7	5.6	30.4	< 1.3	< 9.7	36.5	26.0	32.4	27.7
16/06/98	4.9	137.7	100.7	142.5	119.4	35.6	58.7	122.9	4.9	< 9.7	123.4	54.0	12.6	3.1
23/06/98	4.9	39.7	28.0	44.2	22.6	20.9	49.8	25.0	3.5	< 9.7	37.0	17.0	11.5	4.3
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
07/07/98	4.6	37.1	10.6	16.8	12.7	5.9	8.1	17.8	2.1	< 9.7	35.5	18.0	22.9	23.4
14/07/98	4.7	25.8	14.8	16.1	16.2	4.9	4.6	21.0	< 1.3	< 9.7	23.8	16.0	21.9	34.2
21/07/98	4.8	24.8	13.6	16.8	33.7	10.6	8.5	37.3	1.5	< 9.7	20.7	16.0	15.5	18.7
28/07/98	4.6	28.6	16.8	19.2	7.4	< 4.1	5.6	11.5	< 1.3	< 9.7	27.7	16.0	24.5	20.0
04/08/98	5.0	40.4	19.6	39.3	46.0	17.9	13.8	49.3	1.5	< 9.7	34.8	20.0	10.7	14.1
11/08/98	5.4	27.9	14.1	32.0	39.2	20.5	19.2	41.9	2.1	< 9.7	23.2	15.0	3.6	7.6
18/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0
25/08/98	4.5	66.0	54.6	61.6	13.8	4.9	10.9	18.3	2.2	< 9.7	64.3	31.0	33.1	17.0
01/09/98	4.4	85.6	58.1	86.2	12.4	4.1	9.5	20.5	2.3	< 9.7	84.1	39.0	41.7	13.5
08/09/98	5.1	9.9	6.4	4.9	19.9	9.7	4.5	23.4	< 1.3	< 9.7	7.5	< 10.0	7.2	22.1
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.6
24/09/98	3.9	160.1	160.7	172.2	45.0	11.4	24.3	23.4	4.8	< 9.7	154.7	79.0	117.5	2.4
29/09/98	4.1	79.2	79.0	54.7	164.3	38.9	12.2	186.4	4.0	< 9.7	59.4	70.0	83.2	41.9
06/10/98	5.8	27.9	15.7	26.8	118.8	46.4	28.5	131.7	4.3	< 9.7	13.6	24.0	1.7	7.2
13/10/98	4.8	23.8	10.2	12.6	57.3	18.9	7.4	66.5	1.3	< 9.7	16.9	19.0	14.8	24.5
20/10/98	5.0	14.2	4.7	7.8	30.9	13.3	8.0	35.0	< 1.3	< 9.7	10.5	11.0	9.1	49.9
27/10/98	4.8	23.4	9.6	6.0	76.9	23.5	7.4	89.7	1.7	< 9.7	14.1	23.0	14.8	45.1
03/11/98	4.9	49.0	15.8	17.1	280.0	75.3	21.2	308.7	5.8	< 9.7	15.3	47.0	11.5	13.3
10/11/98	4.6	23.0	32.2	16.8	47.2	13.3	7.0	54.0	2.3	< 9.7	17.3	24.0	25.1	12.2
17/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6
24/11/98	5.3	28.7	17.8	28.7	90.0	34.1	16.2	100.5	3.9	< 9.7	17.8	21.0	5.4	5.0
01/12/98	5.6	89.7	113.4	114.3	70.3	17.2	19.3	82.7	2.3	< 9.7	81.2	-	2.5	1.8
08/12/98	5.1	24.0	15.2	22.1	46.6	17.8	11.2	53.4	< 1.3	< 9.7	18.3	17.0	8.5	17.1
15/12/98	5.2	28.0	22.6	22.6	92.3	34.9	22.9	103.7	2.3	< 9.7	16.9	20.0	5.6	7.4
22/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29/12/98	5.0	32.6	14.2	17.1	132.7	45.2	16.4	154.4	2.7	< 9.7	16.6	31.0	10.5	22.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5109	4.7	41.7	29.8	32.0	64.7	20.7	13.4	74.3	2.1	< 9.7	33.9	28.8	25.4	842.5

Eskdalemuir

1998

Site Code:	5002
Easting:	3235
Northing:	6030
Latitude :	55 18 54 N
Longitude:	3 12 20 W
Altitude (m):	259
Rainfall (mm):	1745

Site environment:

Open moorland, Met Office Observatory

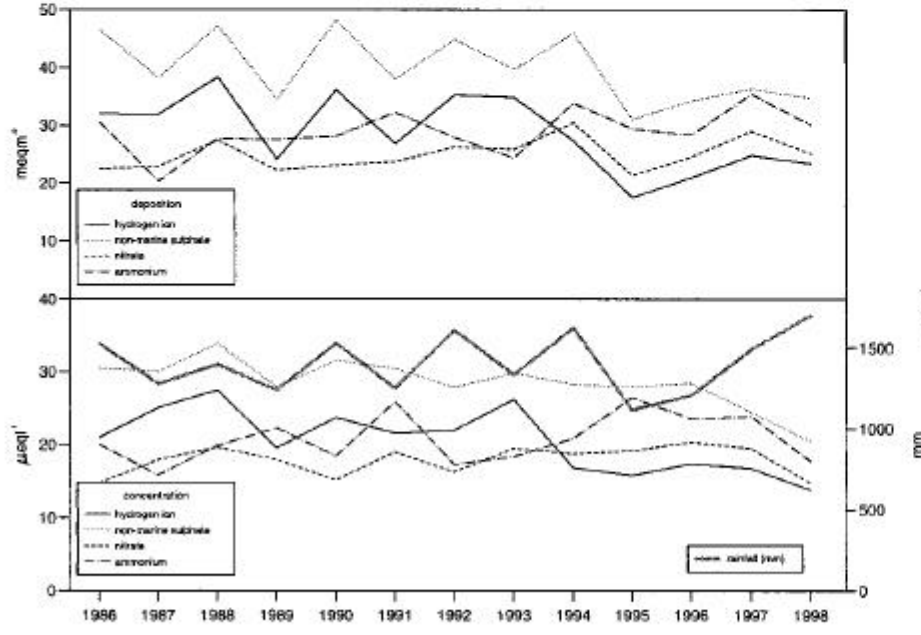
Other measurements:

WOC,DT,Daily SO_2,TIN,TIA,ozone,Met,EMEP

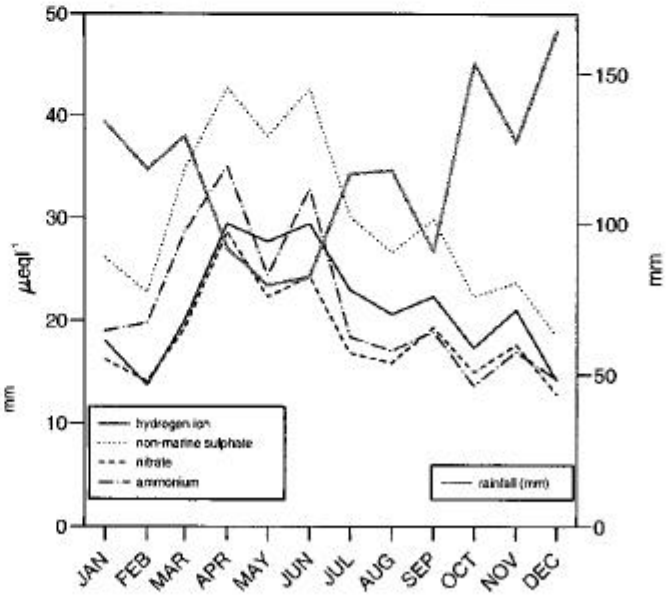
Site operator:

Meteorological Office

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	4.7	34.6	19.5	17.2	106.4	33.2	10.9	115.8	1.3	< 9.7	21.8	31.0	18.6	42.8
14/01/98	4.9	35.0	17.1	26.8	82.7	31.4	11.8	92.2	1.4	< 9.7	25.0	26.0	12.6	21.8
21/01/98	4.4	56.8	55.1	49.4	57.7	14.2	12.8	64.2	1.8	< 9.7	49.9	41.0	42.7	8.6
28/01/98	4.3	106.0	111.2	145.1	90.9	22.2	11.8	108.4	1.6	< 9.7	95.0	60.0	50.1	5.0
04/02/98	5.7	29.5	9.9	29.6	86.6	49.1	20.5	94.0	< 1.3	< 9.7	19.1	21.0	2.2	52.7
11/02/98	6.7	96.9	60.2	81.8	135.0	44.9	146.3	148.6	7.0	< 9.7	80.7	47.0	.2	4.9
18/02/98	5.1	62.6	38.8	56.0	146.5	47.6	27.0	171.9	4.0	< 9.7	45.0	40.0	8.7	17.6
25/02/98	5.6	30.0	6.1	16.5	134.2	60.2	23.0	155.7	2.7	< 9.7	13.8	28.0	2.6	39.4
04/03/98	4.8	24.6	15.1	14.5	47.2	17.6	7.7	48.8	< 1.3	< 9.7	18.9	18.0	15.5	46.2
11/03/98	5.9	61.4	25.8	64.2	159.9	67.5	52.0	174.8	4.0	< 9.7	42.2	36.0	1.2	5.2
18/03/98	4.3	83.5	43.3	70.8	35.6	11.7	12.9	39.0	< 1.3	< 9.7	79.2	40.0	47.9	8.2
25/03/98	6.8	43.7	29.4	41.0	23.9	17.4	179.7	26.5	< 1.3	< 9.7	40.9	24.0	.2	39.3
01/04/98	4.5	32.1	23.3	15.6	20.2	7.1	4.4	24.6	< 1.3	< 9.7	29.7	19.0	35.5	30.4
08/04/98	4.7	25.6	13.1	5.4	78.7	25.3	8.0	89.7	1.7	< 9.7	16.1	20.0	20.0	13.4
15/04/98	4.3	52.1	57.7	47.3	37.8	8.9	7.5	42.9	3.0	< 9.7	47.5	40.0	50.1	18.8
22/04/98	4.8	28.5	17.3	25.1	42.1	19.0	11.2	44.1	1.6	< 9.7	23.4	19.0	14.8	53.7
29/04/98	6.0	38.1	12.0	32.0	71.9	45.0	55.1	76.5	2.4	< 9.7	29.5	19.0	1.0	7.4
06/05/98	5.2	44.3	21.1	40.0	90.4	42.8	27.4	101.4	2.4	< 9.7	33.4	27.0	6.3	18.3
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
20/05/98	7.1	61.9	25.1	9.9	121.9	43.0	812.0	141.2	6.1	< 9.7	47.2	46.0	.1	2.1
27/05/98	4.6	27.6	25.4	18.0	23.1	9.6	13.2	26.7	< 1.3	< 9.7	24.9	21.0	27.5	45.5
03/06/98	4.7	26.2	17.6	16.6	17.3	8.1	9.9	20.4	< 1.3	< 9.7	24.1	16.0	18.6	36.3
10/06/98	4.6	24.0	19.8	12.1	12.7	4.4	5.1	16.2	< 1.3	< 9.7	22.5	17.0	24.5	30.4
17/06/98	5.0	18.3	9.6	13.3	16.9	8.0	8.4	20.1	< 1.3	< 9.7	16.3	10.0	8.9	46.5
24/06/98	4.9	20.8	9.3	11.3	22.3	8.5	4.1	26.0	< 1.3	< 9.7	18.1	12.0	12.0	48.6
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
08/07/98	4.8	17.4	5.1	5.6	11.0	4.5	4.3	16.5	< 1.3	< 9.7	16.1	10.0	17.8	51.3
15/07/98	5.0	22.2	10.6	18.6	22.0	8.6	4.5	25.1	< 1.3	< 9.7	19.6	13.0	11.2	68.2
22/07/98	4.8	21.3	10.1	9.5	35.1	12.4	5.0	39.7	1.6	< 9.7	17.0	15.0	16.2	28.9
29/07/98	4.9	10.3	6.9	2.6	21.9	8.5	3.6	25.0	< 1.3	< 9.7	7.7	10.0	12.6	48.0
05/08/98	5.2	21.2	11.5	16.6	28.1	15.5	15.0	31.6	< 1.3	< 9.7	17.8	12.0	6.8	33.3
12/08/98	5.0	29.1	10.8	23.1	41.1	18.0	10.3	44.6	< 1.3	< 9.7	24.2	16.0	10.5	31.9
19/08/98	5.1	17.5	8.7	14.3	17.3	10.5	7.7	20.2	< 1.3	< 9.7	15.4	10.0	8.7	29.5
26/08/98	4.3	50.8	33.5	36.1	4.4	< 4.1	6.5	11.5	< 1.3	< 9.7	50.2	28.0	44.7	27.5
02/09/98	4.9	27.1	7.3	13.6	33.4	14.7	9.6	36.6	1.3	< 9.7	23.1	15.0	11.7	57.2
09/09/98	5.0	16.5	7.7	6.4	31.1	13.7	8.5	34.4	< 1.3	< 9.7	12.7	12.0	11.0	14.1
16/09/98	5.1	21.8	15.8	21.5	17.7	17.4	24.5	18.7	1.9	< 9.7	19.6	11.0	8.7	8.7
23/09/98	3.8	215.4	210.3	166.8	47.1	14.9	28.4	21.1	5.0	< 9.7	209.7	108.0	169.8	1.8
30/09/98	4.4	63.8	61.4	47.7	176.9	42.6	11.6	203.0	4.2	< 9.7	42.5	57.0	40.7	13.8
07/10/98	5.0	23.8	11.3	15.5	54.8	20.8	9.3	61.6	1.3	< 9.7	17.2	17.0	10.2	40.2
14/10/98	5.1	15.7	5.1	< 2.1	47.9	17.7	12.2	54.3	< 1.3	< 9.7	9.9	13.0	8.3	77.7
21/10/98	5.1	17.3	3.0	4.6	77.4	33.7	11.6	91.0	1.9	< 9.7	8.0	17.0	7.4	107.0
28/10/98	4.9	12.2	6.9	4.4	37.7	14.6	5.9	44.2	< 1.3	< 9.7	7.7	14.0	12.6	50.6
04/11/98	5.2	41.7	8.9	14.6	228.3	69.5	16.8	256.4	5.2	< 9.7	14.2	46.0	7.1	44.5
11/11/98	4.5	29.5	37.3	22.0	49.9	13.1	8.9	55.4	< 1.3	< 9.7	23.5	23.0	30.9	8.9
18/11/98	4.5	44.4	41.7	35.4	124.4	32.0	12.6	137.9	2.7	< 9.7	29.4	42.0	31.6	44.8
25/11/98	5.0	14.1	8.0	9.0	21.1	10.0	4.8	25.4	< 1.3	< 9.7	11.6	10.0	9.3	39.1
02/12/98	4.8	27.2	24.1	31.1	22.6	7.4	6.9	26.4	< 1.3	< 9.7	24.5	17.0	15.1	17.1
09/12/98	5.0	22.8	9.4	14.8	45.5	19.0	7.5	51.0	< 1.3	< 9.7	17.3	16.0	9.3	47.6
16/12/98	4.8	37.4	16.3	21.6	90.6	30.0	10.9	101.2	2.0	< 9.7	26.4	27.0	14.8	31.6
23/12/98	5.2	110.1	9.1	13.3	808.1	321.5	50.6	931.7	16.6	< 9.7	12.8	141.0	6.0	46.8
30/12/98	5.2	16.9	5.3	8.4	60.4	29.7	8.3	68.8	< 1.3	< 9.7	9.6	15.0	5.8	85.7
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5002	5.0	29.6	14.8	17.7	76.1	30.0	16.9	86.6	1.7	< 9.7	20.4	23.2	13.8	1700.4

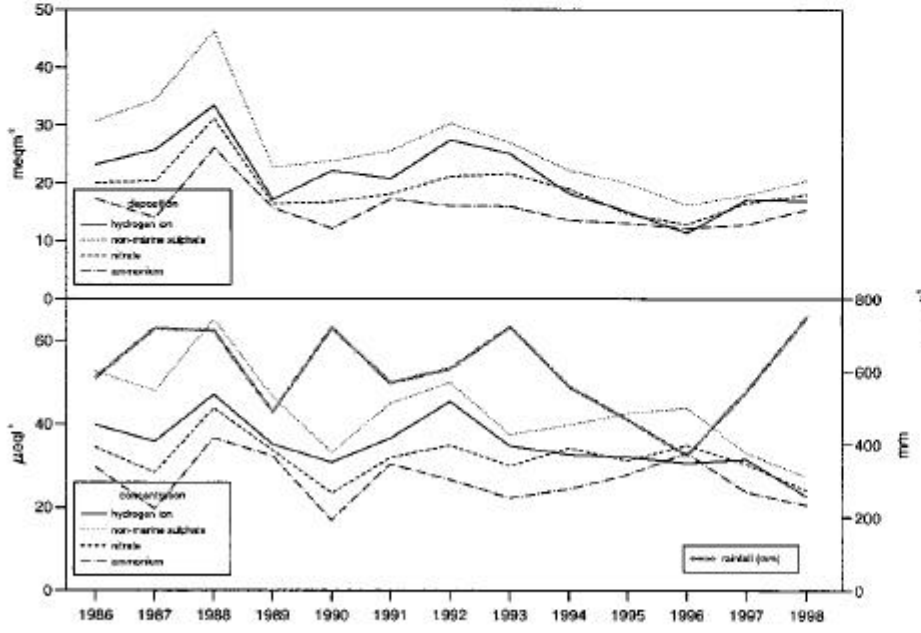
Whiteadder

1998

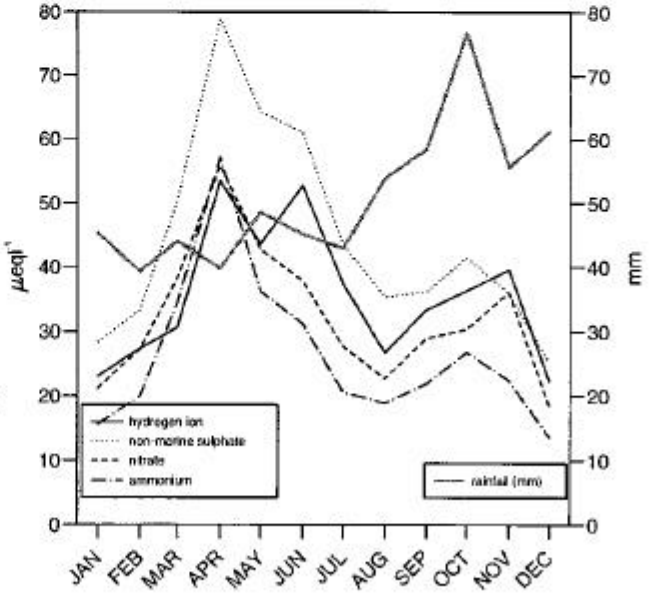
Site Code:	5106
Easting:	3664
Northing:	6633
Latitude :	55 51 42 N
Longitude:	2 32 13 W
Altitude (m):	250
Rainfall (mm):	1050

Site environment:
Open moorland
Other measurements:
DT
Site operator:
East of Scotland Water

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	4.9	38.0	29.5	20.5	140.7	43.5	23.0	154.3	2.9	< 9.7	21.0	35.0	12.3	10.9
13/01/98	4.7	29.9	15.7	12.1	72.6	22.8	10.1	78.4	< 1.3	< 9.7	21.2	26.0	21.4	16.3
20/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
27/01/98	4.7	39.9	22.6	21.7	80.9	23.0	24.6	93.3	2.8	< 9.7	30.1	28.0	21.9	4.9
02/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
10/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
17/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
24/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2
03/03/98	4.6	40.2	19.7	6.1	169.5	46.4	12.7	198.1	3.3	< 9.7	19.8	38.0	22.9	8.9
10/03/98	4.9	17.6	20.6	14.8	21.9	8.3	12.3	25.6	< 1.3	< 9.7	15.0	14.0	12.3	15.2
17/03/98	4.8	52.5	37.8	36.3	49.6	20.5	29.8	54.8	3.9	< 9.7	46.6	24.0	14.1	6.5
24/03/98	4.6	60.2	81.2	104.9	40.3	13.3	15.4	42.9	2.8	< 9.7	55.3	35.0	25.7	10.1
31/03/98	4.5	41.3	27.8	14.3	142.6	42.3	10.9	163.8	2.8	< 9.7	24.1	42.0	29.5	27.6
07/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
14/04/98	4.2	86.8	54.2	35.2	242.6	59.8	19.4	267.0	5.7	< 9.7	57.5	77.0	57.5	26.1
21/04/98	4.3	47.4	43.5	33.0	21.3	6.7	10.6	26.5	< 1.3	< 9.7	44.8	30.0	44.7	13.2
28/04/98	3.7	140.8	183.0	92.9	36.0	10.5	22.4	50.6	4.8	< 9.7	136.5	111.0	195.0	3.0
05/05/98	5.2	20.8	13.7	17.1	23.5	15.9	25.5	27.3	< 1.3	< 9.7	18.0	11.0	6.0	10.6
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	4.6	71.2	32.1	41.2	66.3	23.5	29.5	70.4	3.7	< 9.7	63.3	32.0	23.4	7.1
26/05/98	4.4	67.2	60.3	63.7	110.4	33.1	13.9	122.5	3.1	< 9.7	53.9	50.0	41.7	36.4
02/06/98	4.9	39.4	21.8	22.0	64.5	23.4	14.6	69.1	2.2	< 9.7	31.6	27.0	12.6	18.7
09/06/98	4.5	41.4	19.9	16.5	40.3	13.3	13.5	44.6	1.4	< 9.7	36.6	26.0	30.2	30.8
16/06/98	4.5	74.7	50.0	42.5	37.4	10.5	28.9	36.0	3.7	< 9.7	70.2	34.0	35.5	3.7
23/06/98	4.6	37.1	17.4	23.9	18.4	6.9	10.3	20.3	1.7	< 9.7	34.9	17.0	23.4	11.6
30/06/98	4.4	90.3	55.7	39.1	43.0	15.1	36.3	32.3	3.2	< 9.7	85.1	39.0	42.7	2.8
07/07/98	4.7	26.3	7.4	10.8	14.4	7.9	7.9	19.5	< 1.3	< 9.7	24.5	14.0	19.1	31.2
14/07/98	4.7	26.0	12.3	15.5	9.8	4.8	9.4	14.5	< 1.3	< 9.7	24.8	14.0	18.2	29.3
21/07/98	4.6	27.9	17.8	15.8	26.4	7.6	6.6	29.6	2.4	< 9.7	24.8	18.0	26.3	15.5
28/07/98	4.9	18.2	9.6	14.2	6.0	5.2	12.0	11.2	< 1.3	< 9.7	17.4	10.0	13.2	26.7
04/08/98	5.5	7.9	4.4	7.0	13.7	18.6	36.1	29.6	1.6	< 9.7	6.3	< 10.0	2.9	9.8
11/08/98	5.4	17.6	9.7	13.0	30.6	17.4	21.4	32.5	2.5	< 9.7	13.9	11.0	4.4	10.0
18/08/98	4.7	22.6	6.9	5.9	15.9	6.3	7.3	20.1	< 1.3	< 9.7	20.7	14.0	18.6	20.0
25/08/98	4.6	86.3	69.3	62.9	48.1	13.0	48.5	35.1	10.3	< 9.7	80.5	35.0	25.1	3.8
01/09/98	4.2	88.8	62.4	82.0	23.8	5.9	6.2	26.4	2.2	< 9.7	86.0	44.0	70.8	6.2
08/09/98	4.9	16.5	6.5	4.6	21.5	9.8	9.1	25.3	< 1.3	< 9.7	13.9	11.0	12.3	22.6
15/09/98	5.4	37.9	14.9	23.6	68.0	45.2	83.1	74.0	3.8	< 9.7	29.7	19.0	4.4	3.8
22/09/98	4.5	76.0	59.5	59.2	40.5	10.5	32.2	26.7	6.3	< 9.7	71.1	39.0	33.9	7.1
29/09/98	4.3	70.4	59.6	44.0	207.7	49.8	13.5	236.5	4.6	< 9.7	45.4	66.0	44.7	29.9
06/10/98	5.0	25.3	18.3	12.3	91.9	28.6	20.3	102.8	2.3	< 9.7	14.3	24.0	10.0	14.1
13/10/98	4.8	28.3	7.8	6.4	124.5	37.0	12.0	146.9	2.5	< 9.7	13.3	29.0	14.8	29.2
20/10/98	5.1	11.1	6.1	6.7	25.1	11.7	10.4	29.0	< 1.3	< 9.7	8.1	10.0	7.6	37.1
27/10/98	4.9	24.7	6.2	2.6	135.5	42.4	12.0	156.0	3.1	< 9.7	8.4	30.0	11.5	51.7
03/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/11/98	4.6	24.0	22.0	6.5	52.5	14.3	5.7	59.1	1.4	< 9.7	17.6	25.0	25.1	61.1
17/11/98	5.0	70.3	87.4	39.7	135.0	30.9	13.2	148.9	4.6	< 9.7	54.0	-	10.0	3.3
24/11/98	5.2	21.0	11.1	14.6	69.8	25.0	11.4	79.5	1.9	< 9.7	12.6	17.0	6.2	9.1
01/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
08/12/98	5.1	24.1	13.3	21.8	46.9	21.6	11.4	53.0	< 1.3	< 9.7	18.4	16.0	7.4	15.2
15/12/98	5.3	90.8	11.3	17.6	607.3	163.1	45.1	697.4	13.1	< 9.7	17.6	102.0	5.4	7.3
29/12/98	4.8	31.7	18.3	17.2	109.8	35.8	14.0	128.7	2.3	< 9.7	18.5	30.0	15.1	32.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5106	4.7	36.9	24.0	20.5	80.3	24.7	13.9	91.4	2.2	< 9.7	27.2	29.0	22.6	750.0

Balquhidder

1998

Site Code:	5152
Easting:	2521
Northing:	7206
Latitude :	56 21 17 N
Longitude:	4 23 38 W
Altitude (m):	135
Rainfall (mm):	2245

Site environment:

Open sheep pasture at loch-side

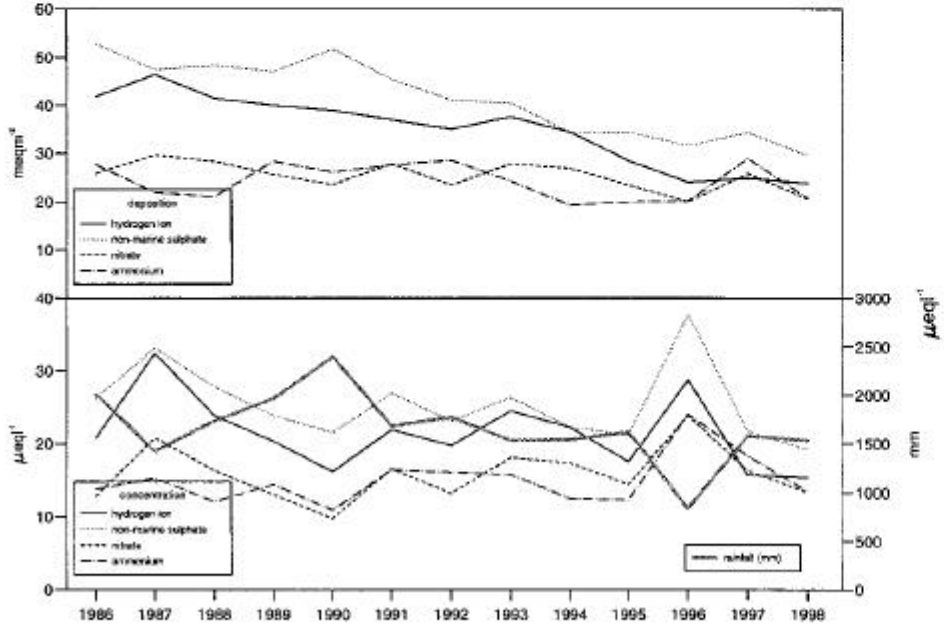
Other measurements:

DT, Met

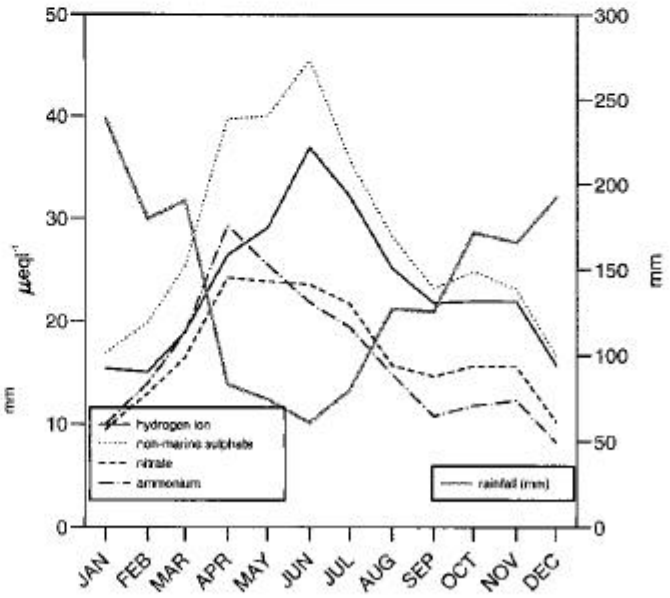
Site operator:

Institute of Hydrology

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
03/01/98	4.9	51.6	11.5	10.1	303.4	85.2	22.5	325.9	5.6	< 9.7	15.0	59.0	12.0	54.8
10/01/98	5.0	22.2	13.9	8.8	77.1	28.6	13.9	88.7	1.6	< 9.7	12.9	21.0	10.0	41.9
17/01/98	4.8	20.6	22.9	10.5	18.4	7.9	6.3	23.8	< 1.3	< 9.7	18.4	15.0	17.8	26.5
24/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
31/01/98	5.8	27.7	8.0	27.0	99.6	51.2	26.6	106.4	1.5	< 9.7	15.7	22.0	1.7	36.7
07/02/98	5.7	11.7	3.8	7.5	16.9	12.0	39.9	20.8	< 1.3	< 9.7	9.7	< 10.0	2.2	98.8
14/02/98	5.9	33.9	16.8	31.0	31.9	17.1	59.8	35.3	1.5	< 9.7	30.1	15.0	1.2	58.3
21/02/98	5.4	30.8	< 2.1	< 2.1	213.5	76.4	22.8	237.3	4.1	< 9.7	5.0	40.0	3.8	54.9
28/02/98	4.9	64.2	7.6	< 2.1	488.7	128.8	32.1	543.6	9.7	< 9.7	5.3	87.0	11.7	40.9
07/03/98	4.9	27.6	18.6	16.1	68.6	24.7	12.2	72.9	< 1.3	< 9.7	19.3	22.0	12.9	14.3
14/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
21/03/98	5.0	35.2	18.4	30.0	74.5	29.2	14.7	84.2	1.7	< 9.7	26.3	24.0	10.0	30.9
28/03/98	4.5	31.8	25.4	19.7	29.4	10.7	4.5	34.2	< 1.3	< 9.7	28.3	23.0	28.2	57.9
05/04/98	4.4	33.4	18.1	5.4	9.6	< 4.1	< 2.5	14.5	3.9	< 9.7	32.3	24.0	36.3	24.5
11/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.9
19/04/98	4.6	34.4	23.1	27.3	13.7	5.8	5.8	17.7	< 1.3	< 9.7	32.7	19.0	24.0	62.2
26/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.1
02/05/98	5.3	13.9	5.9	4.1	44.2	26.8	23.2	50.2	1.4	< 9.7	8.6	12.0	4.7	15.9
09/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
23/05/98	4.7	79.9	75.4	68.6	72.2	20.9	20.7	67.6	4.8	< 9.7	71.2	43.0	21.9	3.2
30/05/98	4.9	52.5	31.8	41.4	31.4	10.9	15.2	30.0	< 1.3	< 9.7	48.7	23.0	11.7	9.3
06/06/98	4.5	25.1	12.1	5.0	6.0	< 4.1	3.0	16.7	< 1.3	< 9.7	24.4	17.0	28.2	30.9
13/06/98	4.7	31.6	18.6	23.3	12.8	6.3	13.7	15.3	< 1.3	< 9.7	30.0	16.0	19.1	46.2
01/07/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/07/98	5.9	13.8	< 2.1	12.0	12.2	31.0	47.8	16.1	7.4	< 9.7	12.3	< 10.0	1.3	3.0
10/07/98	7.0	50.1	4.3	508.1	19.0	58.9	116.8	22.2	37.2	108.5	47.8	58.0	.1	40.4
18/07/98	4.8	15.2	4.9	3.6	12.6	5.0	3.4	17.0	< 1.3	< 9.7	13.7	10.0	16.6	53.7
26/07/98	5.0	11.5	< 2.1	3.6	7.9	6.9	28.1	11.2	2.4	< 9.7	10.5	-	10.0	4.4
02/08/98	5.0	13.1	8.0	5.4	19.7	7.0	5.8	17.7	< 1.3	< 9.7	10.7	< 10.0	10.7	46.9
10/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
15/08/98	5.2	7.7	< 2.1	< 2.1	23.0	13.7	8.5	26.3	< 1.3	< 9.7	5.0	< 10.0	6.6	31.2
22/08/98	5.8	32.3	4.4	49.2	12.4	55.6	48.8	13.1	12.1	92.1	30.8	13.0	1.5	8.0
30/08/98	4.3	53.8	36.2	33.0	11.7	< 4.1	3.2	16.5	< 1.3	< 9.7	52.4	32.0	51.3	49.2
05/09/98	4.7	26.1	15.1	15.5	15.8	6.9	8.0	20.2	< 1.3	< 9.7	24.2	15.0	19.1	41.9
13/09/98	7.4	93.4	324.7	115.3	762.6	792.8	775.5	1329.6	3320.5	1052.1	1.5	388.0	.0	4.8
20/09/98	4.2	67.7	75.2	64.2	10.4	< 4.1	14.1	10.5	2.1	< 9.7	66.4	37.0	61.7	8.9
28/09/98	4.2	81.7	81.7	73.0	48.5	10.9	5.1	55.7	2.8	< 9.7	75.9	54.0	69.2	13.3
03/10/98	6.3	17.8	12.1	11.5	53.8	21.8	9.7	58.3	1.3	< 9.7	11.3	64.0	.5	20.9
11/10/98	5.0	20.5	4.1	< 2.1	104.7	33.4	10.6	121.0	2.6	< 9.7	7.8	23.0	10.0	35.5
17/10/98	5.2	11.9	< 2.1	< 2.1	20.0	16.5	8.2	24.1	1.6	< 9.7	9.4	< 10.0	6.5	25.3
23/10/98	5.1	29.2	< 2.1	< 2.1	192.8	63.9	18.4	220.6	4.9	< 9.7	6.0	37.0	7.9	68.4
30/10/98	5.4	13.2	2.5	4.8	69.0	29.2	14.0	79.9	2.3	< 9.7	4.8	14.0	3.9	13.4
06/11/98	4.7	41.8	15.1	11.7	199.1	54.1	22.3	218.6	4.6	< 9.7	17.8	38.0	20.0	64.2
13/11/98	4.6	26.5	21.4	17.2	38.5	10.8	3.8	46.1	< 1.3	< 9.7	21.8	22.0	25.7	61.7
23/11/98	5.1	16.3	5.4	5.7	53.3	22.4	7.6	61.1	< 1.3	< 9.7	9.9	15.0	7.6	71.5
29/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
05/12/98	4.9	16.2	13.0	10.4	32.0	13.1	5.2	35.6	< 1.3	< 9.7	12.3	14.0	13.2	28.9
12/12/98	5.0	29.0	5.9	10.5	82.7	29.7	12.9	93.7	1.7	< 9.7	19.0	22.0	9.5	82.5
18/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/12/98	4.5	34.7	23.6	23.4	57.5	16.6	5.2	67.5	1.3	< 9.7	27.8	28.0	29.5	46.1
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5152	5.0	29.0	13.4	13.6	81.5	27.5	15.6	91.7	2.0	< 2.7	19.2	24.4	15.3	1540.5

Polloch

1998

Site Code:	5151
Easting:	1792
Northing:	7689
Latitude :	56 45 34 N
Longitude:	5 36 46 W
Altitude (m):	30
Rainfall (mm):	2170

Site environment:

Open moorland, in forest area

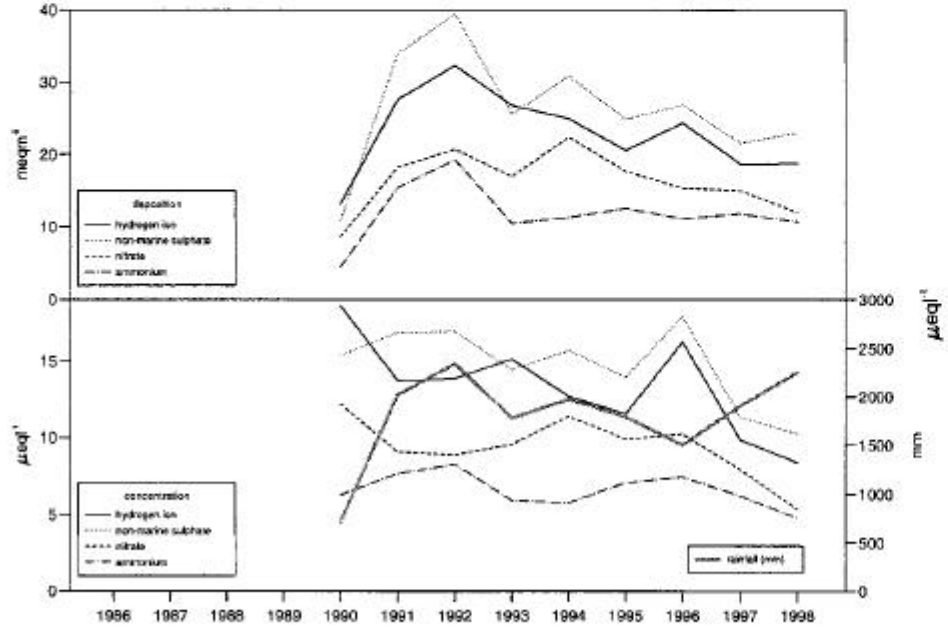
Other measurements:

DT, UKAWMN

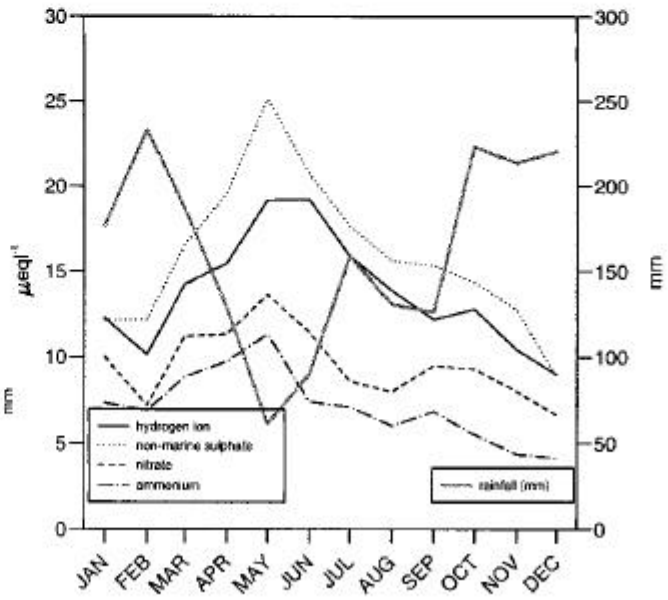
Site operator:

Forest Enterprise

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	5.2	32.8	12.8	14.1	128.9	47.4	24.2	144.5	2.3	< 9.7	17.2	29.0	6.6	63.6
13/01/98	5.3	14.3	< 2.1	< 2.1	97.9	49.2	18.3	102.7	< 1.3	< 9.7	2.5	18.0	4.6	54.3
20/01/98	5.0	29.6	17.4	19.1	54.8	22.5	17.3	61.2	2.1	< 9.7	23.0	19.0	9.3	24.4
27/01/98	6.4	75.8	28.2	130.3	115.7	64.7	34.1	127.2	33.1	38.1	61.9	44.0	.4	19.9
03/02/98	5.4	27.3	3.9	4.8	164.1	62.4	18.1	192.5	3.0	< 9.7	7.5	32.0	3.9	82.1
10/02/98	5.8	13.5	4.1	4.1	39.8	21.4	54.6	42.8	< 1.3	< 9.7	8.7	10.0	1.6	150.7
17/02/98	5.6	33.9	9.9	19.6	107.6	47.2	35.8	123.6	2.5	< 9.7	21.0	25.0	2.3	74.5
24/02/98	5.6	173.9	2.9	< 2.1	1433.6	499.6	82.7	1607.5	28.8	< 9.7	1.2	214.0	2.5	44.8
04/03/98	4.6	30.9	21.6	7.4	83.3	24.8	9.9	86.4	< 1.3	< 9.7	20.8	29.0	22.9	19.1
10/03/98	5.2	18.4	4.9	< 2.1	87.4	37.4	19.3	98.7	1.9	< 9.7	7.9	21.0	6.9	73.0
17/03/98	5.2	63.6	16.1	13.8	309.0	93.5	27.9	344.3	6.2	< 9.7	26.3	58.0	6.9	20.7
24/03/98	4.7	33.9	12.8	11.9	83.4	29.7	12.4	91.4	1.7	< 9.7	23.8	26.0	18.2	40.0
31/03/98	4.7	23.6	14.5	5.0	9.5	5.0	6.4	10.6	< 1.3	< 9.7	22.4	14.0	21.9	9.1
07/04/98	4.9	15.7	9.1	3.7	29.3	14.7	8.9	33.3	< 1.3	< 9.7	12.2	15.0	13.8	17.4
14/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
21/04/98	4.8	20.6	12.3	6.9	37.5	15.3	9.3	40.3	< 1.3	< 9.7	16.1	16.0	14.8	39.0
28/04/98	4.8	31.8	15.9	7.1	77.9	25.3	14.2	86.7	2.4	< 9.7	22.4	26.0	14.8	17.2
05/05/98	5.4	19.4	6.6	4.0	65.2	32.4	17.1	71.6	2.5	< 9.7	11.5	15.0	4.2	3.9
12/05/98	4.3	86.3	62.2	84.2	8.3	< 4.1	15.5	13.4	2.8	< 9.7	85.3	38.0	53.7	11.9
19/05/98	4.5	60.1	24.8	26.1	95.0	27.8	19.2	92.0	2.0	< 9.7	48.7	33.0	30.9	5.0
26/05/98	4.3	51.5	39.5	24.4	29.6	9.7	14.5	30.7	4.1	< 9.7	47.9	33.0	49.0	8.4
02/06/98	4.8	21.9	16.1	11.4	10.5	< 4.1	14.0	12.6	2.0	< 9.7	20.6	13.0	14.5	19.3
09/06/98	5.2	8.7	< 2.1	< 2.1	17.4	8.1	5.2	20.5	< 1.3	< 9.7	6.6	< 10.0	6.9	17.8
23/06/98	4.9	17.5	6.4	5.3	16.2	8.1	5.3	18.4	< 1.3	< 9.7	15.5	10.0	12.3	23.0
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
07/07/98	5.1	13.7	2.4	< 2.1	40.5	15.7	6.9	46.9	1.8	< 9.7	8.8	11.0	7.8	51.0
14/07/98	5.0	10.8	< 2.1	< 2.1	22.1	8.6	4.3	25.6	< 1.3	< 9.7	8.1	10.0	11.2	82.0
21/07/98	5.0	12.4	< 2.1	< 2.1	27.2	10.3	5.3	30.0	< 1.3	< 9.7	9.1	10.0	11.2	66.0
28/07/98	5.0	11.5	< 2.1	< 2.1	26.8	11.4	4.9	31.1	< 1.3	< 9.7	8.3	10.0	10.5	73.7
04/08/98	5.4	6.4	< 2.1	< 2.1	16.8	13.2	7.2	20.7	< 1.3	< 9.7	4.4	< 10.0	3.8	64.8
11/08/98	4.8	21.6	6.6	2.8	54.7	17.9	7.4	61.4	1.4	< 9.7	15.1	19.0	16.2	85.8
18/08/98	5.2	12.0	< 2.1	< 2.1	51.5	24.8	9.1	56.4	< 1.3	< 9.7	5.8	12.0	6.5	45.4
25/08/98	4.9	34.1	14.8	10.6	32.0	11.9	29.6	29.8	1.9	< 9.7	30.2	16.0	13.2	4.1
01/09/98	4.9	18.4	10.2	7.5	8.7	5.8	7.3	11.7	< 1.3	< 9.7	17.3	10.0	13.8	65.1
08/09/98	5.2	11.7	< 2.1	< 2.1	48.8	22.7	8.3	56.7	< 1.3	< 9.7	5.8	12.0	6.5	43.3
15/09/98	5.4	36.7	< 2.1	< 2.1	302.8	101.1	27.6	330.6	6.6	< 9.7	.3	52.0	3.8	24.5
22/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06/10/98	5.2	41.3	< 2.1	< 2.1	315.6	92.0	24.0	350.3	5.9	< 9.7	3.3	54.0	5.9	42.9
13/10/98	5.2	17.4	< 2.1	< 2.1	113.2	41.0	13.1	131.3	2.5	< 9.7	3.8	22.0	6.8	41.0
20/10/98	5.1	18.7	< 2.1	2.2	115.2	42.5	13.0	132.8	2.7	< 9.7	4.8	24.0	8.1	101.9
27/10/98	5.5	60.1	< 2.1	< 2.1	482.8	133.4	33.7	543.2	9.7	< 9.7	1.9	83.0	3.5	42.8
03/11/98	5.2	74.4	3.1	< 2.1	549.4	142.1	33.6	645.8	12.3	< 9.7	8.2	96.0	7.1	95.8
10/11/98	4.8	40.6	13.2	3.9	218.8	61.0	16.1	243.6	4.6	< 9.7	14.3	39.0	15.1	13.2
17/11/98	5.0	22.3	8.5	8.5	76.7	31.3	9.5	88.0	1.7	< 9.7	13.0	20.0	10.5	74.0
24/11/98	5.3	21.0	< 2.1	< 2.1	131.0	48.0	12.5	145.2	2.5	< 9.7	5.2	25.0	5.4	79.9
01/12/98	4.9	19.3	10.1	3.9	63.0	22.6	10.8	72.0	1.9	< 9.7	11.8	17.0	11.5	8.1
08/12/98	5.2	15.5	2.6	< 2.1	69.2	28.8	8.5	80.1	< 1.3	< 9.7	7.1	16.0	6.5	104.3
15/12/98	5.4	28.4	2.5	5.2	174.2	62.6	19.8	201.4	3.3	< 9.7	7.4	31.0	4.3	28.1
22/12/98	5.3	56.3	< 2.1	2.6	433.9	128.2	32.4	498.5	8.6	< 9.7	4.0	77.0	4.5	78.0
29/12/98	4.9	53.3	6.4	4.1	378.6	107.7	26.1	424.9	7.5	< 9.7	7.7	69.0	11.5	92.7
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5151	5.2	29.7	5.3	4.7	161.4	54.1	19.8	183.2	3.3	< 9.3	10.2	32.1	8.4	2250.0

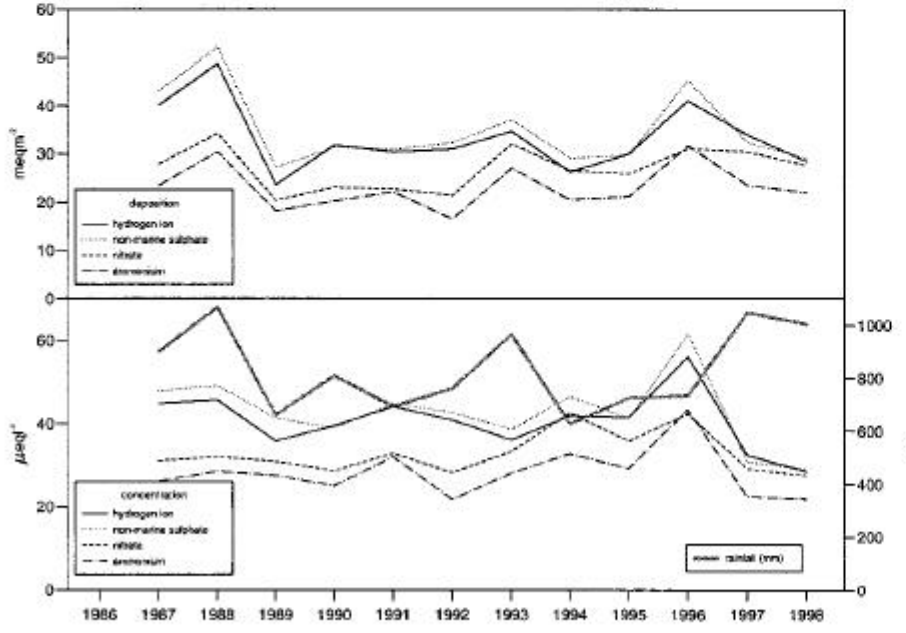
Glen Dye

1998

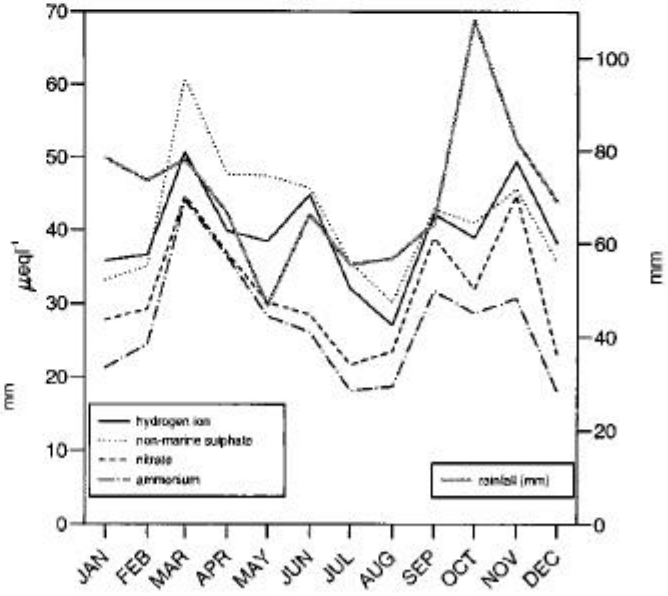
Site Code:	5011
Easting:	3642
Northing:	7864
Latitude :	56 58 03 N
Longitude:	2 35 20 W
Altitude (m):	185
Rainfall (mm):	1311

Site environment:
Open moorland
Other measurements:
DT, Daily SO_2, EMEP
Site operator:
SEPA; North Region

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	4.5	53.8	36.3	29.3	116.2	31.6	14.6	124.1	3.2	< 9.7	39.8	41.0	30.9	7.0
13/01/98	5.6	14.8	8.9	10.6	89.0	29.0	22.0	95.7	4.7	< 9.7	4.1	19.0	2.6	24.6
20/01/98	5.6	32.8	28.8	30.8	151.6	36.8	33.0	156.1	8.9	< 9.7	14.5	29.0	2.5	3.8
27/01/98	5.7	55.9	14.7	16.6	305.2	86.6	35.9	332.1	12.1	< 9.7	19.1	53.0	1.9	3.1
03/02/98	5.6	57.5	18.9	44.8	125.1	38.6	23.5	144.2	4.1	< 9.7	42.4	-	2.5	1.2
10/02/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
17/02/98	5.0	67.2	40.3	65.7	69.6	21.6	32.6	73.5	4.0	< 9.7	58.8	28.0	9.1	2.7
24/02/98	5.6	21.6	9.9	11.4	88.1	38.6	28.6	98.4	2.7	< 9.7	11.0	20.0	2.6	5.6
03/03/98	4.9	31.4	7.6	3.1	163.0	53.8	15.3	188.5	3.2	< 9.7	11.7	34.0	12.6	33.3
10/03/98	4.6	34.9	28.9	17.8	98.6	26.6	11.8	108.3	2.0	< 9.7	23.0	34.0	24.5	10.5
17/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
24/03/98	4.5	44.2	58.6	69.0	14.6	5.6	6.0	19.0	2.1	< 9.7	42.5	31.0	32.4	22.0
31/03/98	4.6	35.1	19.8	11.6	95.9	31.4	7.9	109.4	1.8	< 9.7	23.6	32.0	26.9	156.2
07/04/98	4.9	58.3	16.6	20.3	336.8	101.6	36.6	358.9	8.3	< 9.7	17.7	53.0	13.2	16.8
14/04/98	4.5	60.8	43.7	32.7	149.2	39.8	10.7	162.4	3.8	< 9.7	42.8	48.0	35.5	5.1
21/04/98	4.1	61.3	74.2	47.2	34.8	9.1	5.1	38.9	1.3	< 9.7	57.1	50.0	72.4	42.8
28/04/98	4.3	120.0	83.3	70.4	104.7	27.2	22.1	85.9	9.6	< 9.7	107.4	55.0	55.0	2.7
05/05/98	5.1	13.0	6.0	< 2.1	12.0	8.8	25.8	16.8	1.5	< 9.7	11.6	< 10.0	8.5	5.3
12/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/05/98	4.7	47.1	48.1	31.8	39.9	16.3	31.3	35.3	6.0	< 9.7	42.3	26.0	21.9	6.0
26/05/98	4.5	53.7	33.3	32.8	133.9	39.8	12.0	148.9	3.7	< 9.7	37.6	43.0	30.2	29.2
02/06/98	4.6	33.6	26.0	25.3	31.6	12.4	6.1	33.9	2.0	< 9.7	29.8	23.0	25.1	25.1
09/06/98	4.5	45.5	22.8	27.1	36.1	9.7	3.2	38.2	3.5	< 9.7	41.1	28.0	33.1	7.2
16/06/98	4.4	45.7	29.9	9.1	22.2	6.1	13.1	21.5	2.9	< 9.7	43.0	26.0	38.9	5.4
23/06/98	4.8	31.7	18.2	22.0	18.7	4.8	6.8	18.5	3.2	< 9.7	29.4	16.0	16.2	9.3
30/06/98	4.8	19.5	12.8	< 2.1	16.3	4.1	11.3	16.5	3.8	< 9.7	17.5	12.0	14.1	3.9
07/07/98	4.9	12.7	6.1	< 2.1	9.6	< 4.1	4.4	12.9	< 1.3	< 9.7	11.6	< 10.0	11.7	34.4
14/07/98	4.8	22.2	9.1	10.1	10.4	< 4.1	3.0	14.3	< 1.3	< 9.7	21.0	13.0	17.8	23.9
21/07/98	4.5	27.9	18.4	13.4	15.0	< 4.1	5.3	16.4	3.1	< 9.7	26.1	17.0	28.8	4.0
28/07/98	5.0	11.8	5.9	8.6	2.9	< 4.1	10.6	8.0	< 1.3	< 9.7	11.4	< 10.0	11.2	46.4
04/08/98	5.2	7.5	3.4	< 2.1	4.3	< 4.1	15.5	9.6	< 1.3	< 9.7	7.0	< 10.0	6.0	12.4
11/08/98	6.2	12.9	7.9	15.9	10.0	10.1	165.7	14.6	2.2	16.7	11.6	< 10.0	.6	9.1
18/08/98	5.0	19.7	9.2	5.9	35.6	13.6	20.9	37.3	5.3	< 9.7	15.4	13.0	9.5	5.6
25/08/98	4.2	96.9	115.2	88.8	115.0	29.0	19.3	114.6	5.2	< 9.7	83.0	64.0	66.1	6.2
01/09/98	4.2	61.9	56.4	47.7	25.5	6.6	2.5	27.9	< 1.3	< 9.7	58.9	40.0	63.1	72.8
08/09/98	4.8	18.7	8.6	9.4	13.1	8.3	6.5	17.3	< 1.3	< 9.7	17.1	11.0	14.8	19.6
15/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
22/09/98	3.9	174.6	162.6	162.7	38.5	8.5	11.0	35.1	3.8	< 9.7	170.0	98.0	114.8	5.7
29/09/98	4.5	65.5	42.8	36.5	151.0	36.3	9.8	174.5	3.6	< 9.7	47.3	51.0	33.1	60.8
06/10/98	5.2	24.9	17.1	5.8	127.0	38.8	20.7	137.1	4.5	< 9.7	9.6	25.0	6.5	3.4
13/10/98	4.8	17.5	5.0	< 2.1	40.5	13.5	5.9	46.0	1.3	< 9.7	12.6	15.0	16.2	20.8
20/10/98	4.7	27.1	10.9	7.6	101.0	29.2	8.5	117.6	2.5	< 9.7	15.0	28.0	21.4	80.9
27/10/98	5.0	42.2	15.3	9.6	259.4	70.1	20.2	284.4	7.2	< 9.7	11.0	48.0	9.5	6.2
03/11/98	4.8	39.1	18.9	17.1	155.9	43.5	12.4	177.8	3.8	< 9.7	20.3	39.0	16.6	23.7
10/11/98	4.3	43.1	33.0	12.1	96.3	24.1	6.2	113.7	2.6	< 9.7	31.5	34.0	45.7	44.2
17/11/98	4.4	45.2	42.5	34.8	47.9	10.9	5.6	53.5	2.1	< 9.7	39.5	33.0	36.3	8.6
24/11/98	4.9	20.1	15.0	9.8	25.2	7.1	7.0	28.1	2.3	< 9.7	17.0	12.0	12.0	7.5
01/12/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.8
08/12/98	4.9	35.6	28.1	32.3	95.1	27.0	17.2	101.3	3.7	< 9.7	24.2	26.0	12.3	5.9
15/12/98	4.8	46.8	19.3	24.3	58.2	17.3	13.6	62.8	2.9	< 9.7	39.8	23.0	16.2	2.2
22/12/98	5.0	42.9	8.5	10.4	250.1	72.8	18.3	275.3	5.2	< 9.7	12.8	50.0	9.3	24.5
29/12/98	4.5	59.0	39.9	33.8	226.0	56.9	13.7	243.6	4.8	< 9.7	31.7	58.0	33.9	44.6
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5011	4.6	40.1	27.4	21.8	91.3	26.5	10.2	102.7	2.6	< 9.4	29.1	32.5	28.5	1004.7

Allt a' Mharcaidh

1998

Site Code:	5103
Easting:	2876
Northing:	8052
Latitude :	57 07 27 N
Longitude:	3 51 24 W
Altitude (m):	274
Rainfall (mm):	1221

Site environment:

Moorland, in forestry SW Cairngorms

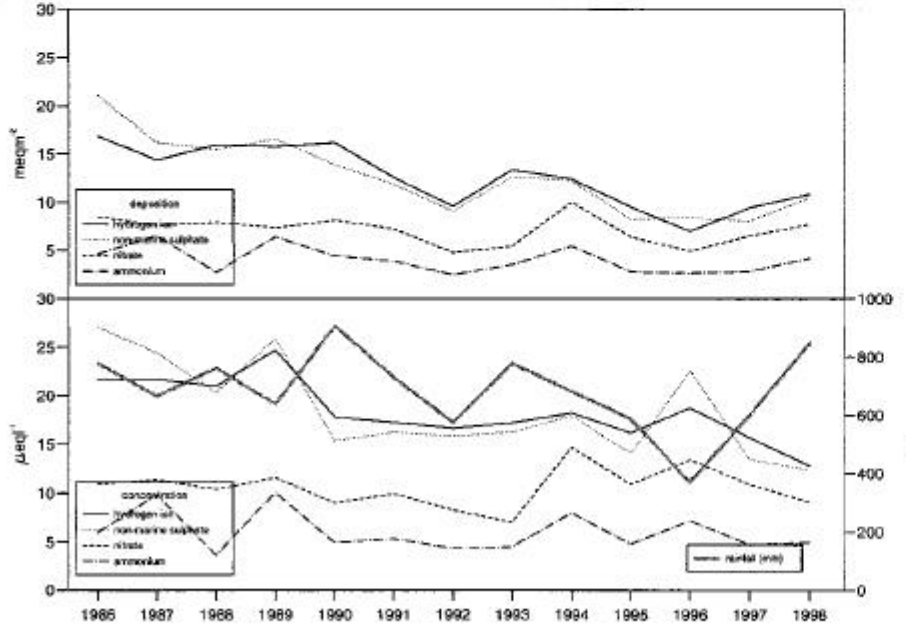
Other measurements:

DT, UKAWMN

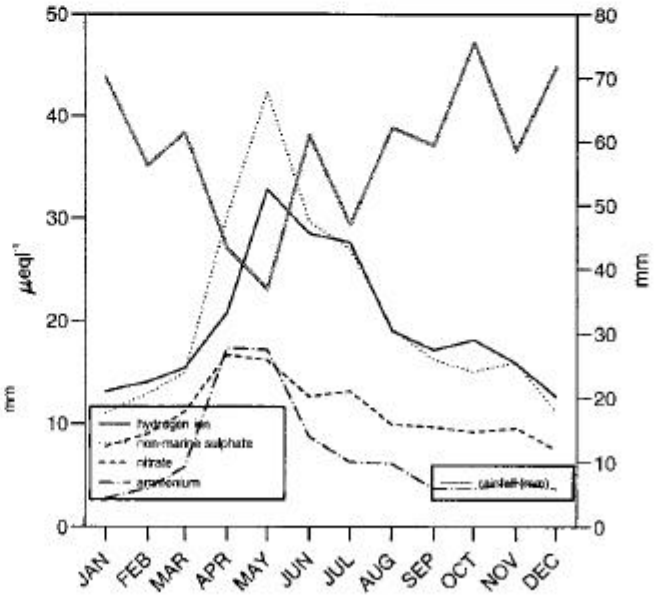
Site operator:

Freshwater Fisheries Laboratory

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (µeql⁻¹)



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
05/01/98	5.6	45.4	25.1	12.3	97.9	27.6	41.9	99.0	5.2	< 9.7	33.6	-	2.5	2.6
12/01/98	5.1	8.4	7.6	< 2.1	26.3	13.3	6.6	30.1	< 1.3	< 9.7	5.3	10.0	8.5	32.3
19/01/98	4.9	25.1	16.1	6.6	98.0	33.9	20.0	106.7	1.5	< 9.7	13.3	23.0	11.5	5.5
26/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.9
02/02/98	5.4	17.5	4.4	< 2.1	67.6	26.9	16.6	73.8	< 1.3	< 9.7	9.4	14.0	4.4	10.2
09/02/98	5.9	12.6	7.3	< 2.1	13.9	8.6	75.3	14.9	< 1.3	< 9.7	10.9	< 10.0	1.2	20.3
16/02/98	5.1	28.3	12.3	18.6	57.9	22.5	18.7	63.9	1.6	< 9.7	21.3	16.0	7.6	9.2
23/02/98	5.4	37.1	< 2.1	< 2.1	296.7	96.1	30.4	331.6	5.9	< 9.7	1.3	50.0	3.6	19.2
02/03/98	4.8	19.0	12.9	< 2.1	54.0	20.0	10.1	57.7	< 1.3	< 9.7	12.5	19.0	16.6	9.7
09/03/98	4.8	21.2	12.8	< 2.1	99.5	33.7	12.6	109.4	2.0	< 9.7	9.2	23.0	15.8	7.0
16/03/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.2
23/03/98	4.7	42.3	18.3	11.3	143.5	46.6	16.4	165.6	2.3	< 9.7	25.0	35.0	18.6	10.0
30/03/98	4.7	17.9	12.6	6.2	14.0	6.7	< 2.5	16.4	< 1.3	< 9.7	16.2	14.0	21.4	34.9
06/04/98	4.6	40.7	15.1	8.5	105.7	31.3	11.7	129.3	2.1	< 9.7	27.9	27.0	26.9	17.3
13/04/98	5.0	32.2	14.1	21.7	96.9	38.4	18.2	108.7	5.4	12.5	20.5	27.0	9.1	14.6
20/04/98	7.2	170.6	17.4	1939.4	111.5	163.5	103.1	148.9	163.2	435.9	157.1	322.0	.1	33.4
27/04/98	7.6	759.6	38.9	3289.8	358.5	137.7	110.6	472.7	411.2	1698.4	716.4	364.0	.0	4.2
04/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8
11/05/98	-	-	-	-	-	-	-	-	-	-	-	.0	-	1.0
18/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
25/05/98	7.8	279.5	32.3	2479.7	214.3	172.5	107.9	240.6	287.9	712.6	253.7	339.0	.0	26.6
01/06/98	7.5	92.6	13.3	606.7	43.8	111.2	87.3	69.1	95.9	267.8	87.4	93.0	.0	26.7
08/06/98	6.8	219.9	8.5	935.1	98.3	120.4	86.2	116.7	135.3	576.7	208.1	156.0	.2	39.5
15/06/98	8.0	1098.9	37.5	6030.5	181.1	599.2	150.2	280.2	272.6	2847.8	1077.1	786.0	.0	4.7
22/06/98	7.0	235.0	12.6	1670.7	84.2	169.5	81.6	101.9	168.0	812.1	224.9	224.0	.1	22.0
29/06/98	7.9	591.5	21.1	4874.7	95.0	178.4	140.1	171.8	506.9	1825.6	580.0	506.0	.0	5.1
06/07/98	7.3	96.7	4.9	887.0	28.1	123.3	56.8	30.7	77.5	279.8	93.3	89.0	.0	22.7
13/07/98	7.0	31.7	4.4	165.3	29.1	84.9	49.9	27.0	22.8	75.5	28.2	26.0	.1	14.8
20/07/98	4.8	10.5	10.1	4.2	6.0	< 4.1	11.1	10.1	< 1.3	< 9.7	9.8	11.0	16.6	16.4
27/07/98	4.9	7.9	3.9	< 2.1	1.6	< 4.1	4.4	6.1	< 1.3	< 9.7	7.7	< 10.0	13.5	42.4
03/08/98	5.2	8.8	3.7	< 2.1	19.7	8.6	12.1	23.0	< 1.3	< 9.7	6.4	< 10.0	6.5	8.1
10/08/98	4.6	29.9	23.7	21.6	16.2	5.0	7.1	19.7	1.3	< 9.7	28.0	19.0	24.5	27.7
17/08/98	4.9	19.1	8.4	2.1	43.8	15.3	12.2	45.9	3.0	< 9.7	13.8	13.0	12.3	4.2
24/08/98	5.3	39.8	26.1	5.7	64.2	20.6	19.3	64.1	3.0	< 9.7	32.1	-	5.0	1.7
31/08/98	4.8	84.7	37.3	115.8	14.8	15.6	35.2	25.6	31.2	109.4	82.9	30.0	14.8	13.6
07/09/98	5.1	13.7	13.1	3.7	15.4	8.2	13.2	19.1	1.3	< 9.7	11.9	10.0	7.4	11.6
14/09/98	5.2	15.2	7.1	4.7	33.2	15.6	24.2	36.6	1.6	< 9.7	11.2	11.0	7.1	5.4
21/09/98	5.0	207.5	166.2	181.7	26.1	10.6	25.2	30.3	9.9	< 9.7	204.3	-	10.0	1.9
28/09/98	4.4	52.7	39.7	29.4	6.4	< 4.1	16.8	9.6	< 1.3	< 9.7	51.9	27.0	37.2	2.4
05/10/98	5.2	12.6	3.9	< 2.1	52.4	23.3	10.2	57.4	< 1.3	< 9.7	6.3	13.0	7.1	17.3
12/10/98	5.0	12.6	2.1	< 2.1	66.3	22.9	7.2	76.2	< 1.3	< 9.7	4.6	16.0	9.8	47.7
19/10/98	5.2	9.4	4.9	2.4	15.1	14.5	8.6	20.2	< 1.3	< 9.7	7.6	< 10.0	7.1	29.9
26/10/98	5.4	21.3	< 2.1	< 2.1	155.3	53.7	18.0	181.5	3.4	< 9.7	2.6	30.0	4.4	28.2
02/11/98	5.0	15.2	7.4	< 2.1	59.1	22.8	8.9	64.3	1.7	< 9.7	8.0	17.0	10.2	16.0
09/11/98	4.8	32.8	13.6	3.6	189.8	51.7	13.5	215.9	4.0	< 9.7	9.9	36.0	14.1	30.7
16/11/98	5.0	8.1	5.9	3.7	7.0	< 4.1	12.9	11.8	< 1.3	< 9.7	7.3	< 10.0	9.3	7.0
23/11/98	5.2	< 2.5	4.4	< 2.1	23.8	12.1	8.2	27.6	< 1.3	< 9.7	< 5.4	< 10.0	5.9	18.5
30/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
07/12/98	5.2	14.3	7.6	4.1	55.7	22.5	12.4	59.4	< 1.3	< 9.7	7.6	14.0	5.6	10.4
14/12/98	5.3	12.9	< 2.1	2.6	61.2	28.1	12.9	72.0	< 1.3	< 9.7	5.5	13.0	4.8	27.8
21/12/98	4.8	19.0	8.6	5.0	49.7	19.6	7.2	57.0	< 1.3	< 9.7	13.0	17.0	14.1	47.5
31/12/98	5.0	24.5	5.3	2.1	143.2	48.7	12.9	165.7	2.8	< 9.7	7.2	30.0	9.5	21.2
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5103	5.0	18.8	8.6	4.6	65.0	23.4	12.9	74.8	1.4	138.0	11.1	17.0	11.4	846.1

Strathvaich Dam

1998

Site Code:	5010
Easting:	2347
Northing:	8750
Latitude :	57 44 04 N
Longitude:	4 46 36 W
Altitude (m):	270
Rainfall (mm):	1576

Site environment:

Open moorland, deer

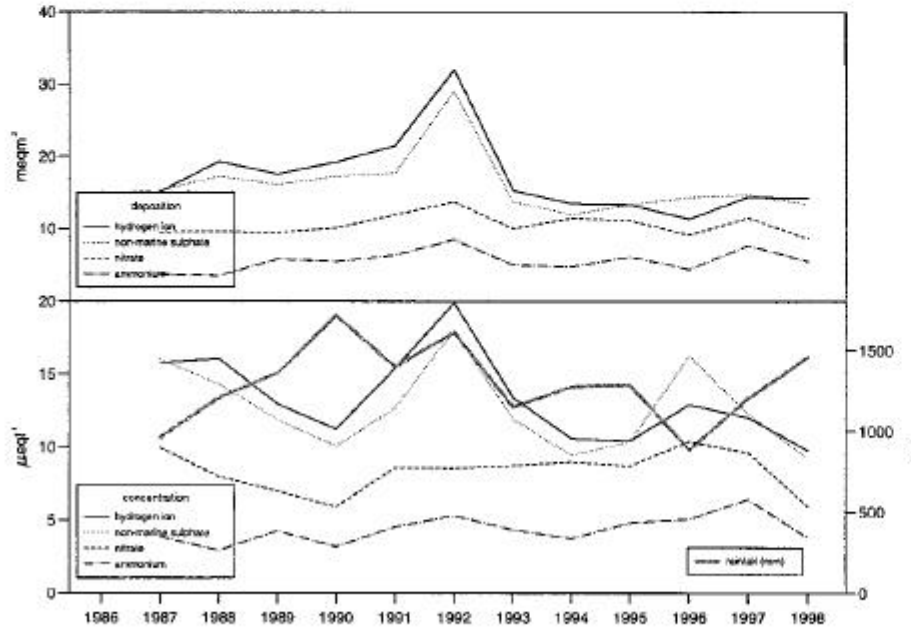
Other measurements:

WOC,DT,Daily SO_2,NOx,SO_2,ozone,EMEP

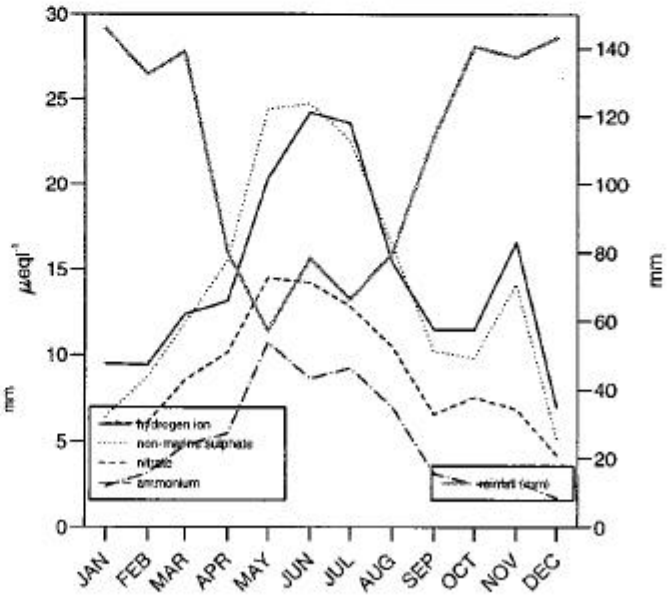
Site operator:

Clova Environmental

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1996 (μeql^{-1})



start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
06/01/98	5.3	6.6	4.4	< 2.1	15.0	12.2	13.8	18.4	< 1.3	< 9.7	4.8	< 10.0	4.7	35.0
13/01/98	5.2	13.5	4.4	< 2.1	89.6	40.7	12.9	101.8	< 1.3	< 9.7	2.7	19.0	6.5	20.4
20/01/98	5.1	9.2	17.2	< 2.1	18.7	10.2	15.1	24.0	< 1.3	< 9.7	7.0	< 10.0	8.3	8.3
27/01/98	4.9	35.5	6.8	5.8	143.1	41.9	14.3	167.5	2.1	< 9.7	18.3	33.0	13.5	11.5
03/02/98	5.2	23.3	3.4	< 2.1	148.6	53.9	16.2	161.7	2.1	< 9.7	5.4	29.0	7.1	55.0
10/02/98	5.5	9.0	2.3	5.5	13.7	10.5	33.3	17.5	< 1.3	< 9.7	7.4	< 10.0	3.2	49.7
17/02/98	5.3	28.4	12.7	18.8	57.0	24.9	21.6	64.1	1.4	< 9.7	21.5	13.0	4.8	31.7
24/02/98	5.5	45.9	< 2.1	< 2.1	381.0	114.5	35.2	417.4	7.5	< 9.7	.0	65.0	3.5	37.4
03/03/98	5.0	23.1	8.5	3.9	124.1	43.2	14.8	147.3	2.4	< 9.7	8.1	28.0	9.8	12.1
10/03/98	5.2	19.4	5.2	< 2.1	131.9	53.5	22.3	144.8	2.4	< 9.7	3.5	26.0	6.5	35.2
17/03/98	7.0	48.2	8.5	4.8	277.1	85.8	32.1	308.0	5.5	< 9.7	14.8	198.0	.1	17.9
24/03/98	4.8	47.2	12.9	7.6	215.7	66.7	23.3	243.0	3.6	< 9.7	21.2	47.0	14.1	17.9
31/03/98	4.5	36.6	17.3	6.8	84.4	25.8	6.8	102.4	2.2	< 9.7	26.4	27.0	35.5	67.7
07/04/98	5.0	16.6	3.4	< 2.1	68.4	34.8	13.7	73.5	1.4	< 9.7	8.4	14.0	9.1	40.6
14/04/98	4.9	29.6	9.6	3.0	130.2	45.0	17.8	147.6	2.6	< 9.7	13.9	30.0	12.0	13.8
21/04/98	4.9	24.0	21.3	8.6	54.1	20.3	21.9	53.0	< 1.3	< 9.7	17.5	17.0	11.7	5.7
28/04/98	4.7	37.2	12.2	8.2	110.7	35.0	14.4	128.4	2.2	< 9.7	23.9	31.0	18.6	13.9
05/05/98	5.1	15.0	5.7	2.8	39.3	19.6	11.0	43.0	< 1.3	< 9.7	10.2	12.0	7.9	13.5
12/05/98	4.5	74.5	49.4	75.2	4.4	< 4.1	22.2	9.6	< 1.3	< 9.7	74.0	28.0	28.8	5.4
19/05/98	4.5	86.9	32.7	27.5	293.7	75.0	26.8	318.2	6.0	< 9.7	51.5	69.0	35.5	4.7
26/05/98	4.6	86.9	26.3	20.6	408.9	112.2	32.2	465.2	8.7	< 9.7	37.6	81.0	24.0	8.8
02/06/98	4.9	12.3	8.4	< 2.1	11.8	7.7	6.0	15.8	< 1.3	< 9.7	10.9	10.0	13.5	32.2
09/06/98	5.2	18.5	< 2.1	< 2.1	114.3	36.1	14.3	134.5	1.9	< 9.7	4.8	23.0	6.2	11.8
16/06/98	4.6	47.3	35.1	38.4	8.2	4.9	23.5	13.4	< 1.3	< 9.7	46.4	23.0	23.4	30.2
23/06/98	4.8	14.6	6.1	3.8	6.7	< 4.1	2.8	10.9	< 1.3	< 9.7	13.8	10.0	16.2	43.3
30/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
07/07/98	5.0	11.9	6.6	< 2.1	24.6	9.0	6.2	29.8	< 1.3	< 9.7	8.9	10.0	11.2	22.7
14/07/98	6.5	18.7	4.2	40.1	21.7	13.4	10.4	24.4	15.5	19.4	16.0	12.0	.3	21.1
21/07/98	4.9	10.5	2.6	< 2.1	27.4	10.2	4.3	30.9	< 1.3	< 9.7	7.2	11.0	13.8	26.8
28/07/98	5.0	8.0	< 2.1	< 2.1	18.5	8.1	3.6	22.0	< 1.3	< 9.7	5.8	< 10.0	10.0	47.9
04/08/98	4.9	14.2	9.1	6.6	9.3	4.9	6.1	14.0	< 1.3	< 9.7	13.0	< 10.0	11.5	28.7
11/08/98	4.8	27.8	6.1	2.2	120.4	38.6	12.4	136.0	2.6	< 9.7	13.3	28.0	14.8	14.6
18/08/98	5.2	11.7	< 2.1	< 2.1	37.0	18.1	11.5	39.5	< 1.3	< 9.7	7.2	10.0	5.8	17.8
25/08/98	4.5	38.9	25.7	17.8	11.9	4.2	8.2	17.0	1.3	< 9.7	37.5	21.0	32.4	9.3
01/09/98	4.6	25.5	15.7	5.6	6.7	< 4.1	6.6	10.4	< 1.3	< 9.7	24.7	15.0	24.0	11.5
08/09/98	5.2	22.0	< 2.1	< 2.1	126.1	46.7	18.2	140.5	2.9	< 9.7	6.8	26.0	6.0	9.1
15/09/98	5.4	12.9	< 2.1	< 2.1	83.6	42.6	14.4	93.2	2.5	< 9.7	2.8	17.0	3.7	33.4
22/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.9
29/09/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.7
06/10/98	5.3	36.6	< 2.1	< 2.1	282.3	83.5	22.1	314.8	5.5	< 9.7	2.5	49.0	5.1	30.7
13/10/98	5.2	23.3	< 2.1	< 2.1	172.6	56.2	14.7	195.4	3.5	< 9.7	2.5	32.0	6.0	65.9
20/10/98	5.0	22.8	4.2	< 2.1	143.2	45.0	12.2	163.8	3.1	< 9.7	5.5	29.0	11.2	64.1
27/10/98	5.3	33.4	< 2.1	< 2.1	258.6	79.8	20.8	288.0	5.1	< 9.7	2.2	47.0	4.8	71.6
03/11/98	5.4	39.9	< 2.1	< 2.1	306.7	94.2	24.1	354.2	7.2	< 9.7	2.9	56.0	3.9	49.4
10/11/98	4.7	26.8	13.6	< 2.1	151.7	41.1	9.8	174.6	2.9	< 9.7	8.5	30.0	20.9	23.1
17/11/98	5.2	6.3	2.4	< 2.1	31.6	12.9	6.2	34.9	< 1.3	< 9.7	2.5	< 10.0	5.9	37.8
24/11/98	5.2	18.8	3.6	< 2.1	103.7	39.8	11.0	117.9	2.3	< 9.7	6.3	21.0	6.5	42.5
01/12/98	5.2	25.8	4.9	2.6	176.8	60.3	17.9	209.2	4.4	< 9.7	4.5	34.0	5.9	18.6
08/12/98	5.4	26.6	< 2.1	< 2.1	205.3	69.6	18.5	232.5	3.6	< 9.7	1.9	38.0	4.3	40.1
15/12/98	5.5	16.4	< 2.1	< 2.1	107.1	48.0	22.2	125.1	2.4	< 9.7	3.5	20.0	3.2	35.2
22/12/98	5.4	13.5	2.4	< 2.1	79.9	36.9	11.7	92.2	1.5	< 9.7	3.9	16.0	4.2	69.8
29/12/98	5.2	30.4	3.4	< 2.1	227.6	75.7	19.4	250.5	4.2	< 9.7	3.0	42.0	5.6	39.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5010	5.1	23.9	6.0	3.9	121.9	41.9	15.5	138.1	2.5	< 9.3	9.2	27.5	9.7	1457.7

Achanarras

1998

Site Code:	5140
Easting:	3151
Northing:	9550
Latitude :	58 28 31 N
Longitude:	3 27 21 W
Altitude (m):	98
Rainfall (mm):	973

Site environment:

Open moorland, farm pastures

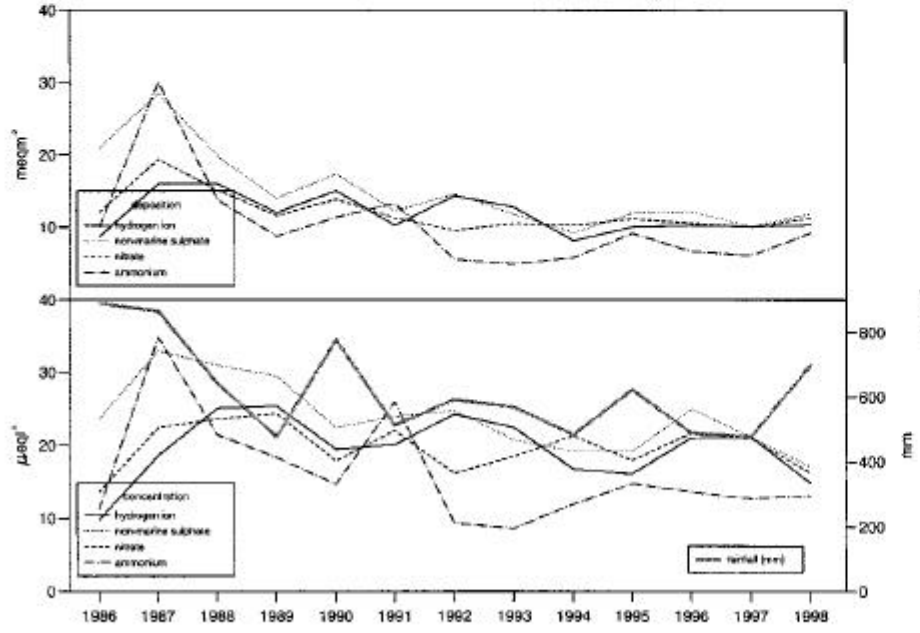
Other measurements:

DT

Site operator:

Mrs J. Erridge

Annual deposition and precipitation weighted mean concentrations



Seasonal variation of concentration in rainfall 1986-1998 (μeql^{-1})

start.date	pH	SO_4 μeql^{-1}	NO_3 μeql^{-1}	NH_4 μeql^{-1}	Na μeql^{-1}	Mg μeql^{-1}	Ca μeql^{-1}	Cl μeql^{-1}	K μeql^{-1}	PO_4 μeql^{-1}	$nmSO_4$ μeql^{-1}	cond μScm^{-1}	H μeql^{-1}	rain mm
07/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/01/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
21/01/98	5.2	17.0	16.3	3.8	80.7	35.9	15.8	91.1	1.3	< 9.7	7.3	19.0	6.6	11.9
28/01/98	5.3	22.1	5.8	5.1	129.7	49.9	14.2	151.6	1.6	< 9.7	6.5	26.0	5.4	23.3
04/02/98	5.5	15.0	< 2.1	4.4	92.3	45.3	14.5	104.6	< 1.3	< 9.7	3.9	18.0	2.9	19.6
11/02/98	6.1	10.1	3.1	< 2.1	14.4	11.2	68.4	18.0	< 1.3	< 9.7	8.4	< 10.0	.9	15.8
18/02/98	5.5	36.2	11.1	12.3	198.0	61.3	29.2	216.0	4.4	< 9.7	12.3	36.0	3.1	2.4
25/02/98	5.5	26.3	< 2.1	< 2.1	192.6	68.7	25.3	222.4	3.8	< 9.7	3.1	31.0	3.3	6.8
04/03/98	5.3	53.2	9.8	6.0	378.3	94.7	26.7	423.2	7.5	< 9.7	7.6	64.0	5.1	4.1
11/03/98	5.2	32.9	5.9	3.1	238.1	83.2	31.2	268.7	4.5	< 9.7	4.3	45.0	6.2	11.8
18/03/98	5.1	41.0	12.1	9.1	227.3	77.9	30.3	247.8	4.4	< 9.7	13.7	45.0	7.9	8.5
25/03/98	4.7	56.5	43.3	43.5	173.5	53.0	15.6	198.6	3.4	< 9.7	35.6	44.0	20.0	10.3
01/04/98	4.3	138.0	41.8	21.0	771.4	176.2	41.0	863.8	14.9	< 9.7	45.1	148.0	50.1	18.8
08/04/98	5.2	53.3	5.6	6.0	344.4	111.7	32.2	391.8	7.2	< 9.7	11.8	65.0	6.9	18.7
15/04/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.1
22/04/98	4.6	35.1	37.3	26.6	32.4	11.2	9.0	28.0	< 1.3	< 9.7	31.2	22.0	24.0	9.0
29/04/98	5.6	37.2	13.8	17.8	175.3	74.2	34.9	195.1	3.6	< 9.7	16.1	34.0	2.6	9.1
06/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.3
13/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8
20/05/98	5.6	88.0	20.5	31.1	460.3	140.6	43.7	521.3	9.8	< 9.7	32.5	82.0	2.5	6.3
27/05/98	-	-	-	-	-	-	-	-	-	-	-	-	-	.5
03/06/98	5.0	22.4	10.5	8.0	87.3	28.6	8.3	94.0	1.6	< 9.7	11.9	22.0	11.0	40.3
10/06/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
17/06/98	4.7	54.0	44.6	51.5	23.2	9.8	30.1	24.4	1.5	< 9.7	51.2	25.0	19.1	13.0
24/06/98	4.4	51.3	30.3	15.2	62.0	17.4	6.4	67.4	1.9	< 9.7	43.8	33.0	42.7	14.6
01/07/98	4.9	43.1	12.6	5.5	212.5	69.6	23.4	231.3	4.8	< 9.7	17.5	41.0	13.8	7.4
08/07/98	5.0	21.8	5.6	< 2.1	114.2	34.2	9.2	132.2	2.9	< 9.7	8.1	27.0	11.0	20.3
15/07/98	4.8	12.4	6.1	< 2.1	16.1	6.2	3.9	19.6	< 1.3	< 9.7	10.5	10.0	14.1	49.9
22/07/98	4.4	38.7	29.5	19.2	34.0	11.2	6.7	37.5	1.5	< 9.7	34.6	30.0	40.7	14.2
29/07/98	5.0	15.5	4.0	< 2.1	54.8	22.4	15.4	61.6	1.5	< 9.7	8.9	15.0	9.5	14.9
05/08/98	7.1	94.8	22.3	809.2	101.5	149.6	115.0	82.0	74.0	118.5	82.5	117.0	.1	14.0
12/08/98	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
19/08/98	6.7	25.9	3.1	67.5	127.8	105.3	79.3	140.4	2.3	17.9	10.5	31.0	.2	10.7
26/08/98	4.6	37.9	34.3	24.5	90.3	30.9	10.8	97.0	2.3	< 9.7	27.0	32.0	26.9	17.7
02/09/98	4.4	56.8	53.9	40.3	74.1	21.4	10.9	77.8	2.2	< 9.7	47.9	41.0	41.7	15.2
09/09/98	5.5	50.0	3.1	3.3	405.5	124.2	35.9	450.6	8.2	< 9.7	1.2	69.0	3.2	9.9
16/09/98	4.1	154.8	116.1	149.9	126.1	31.3	11.1	141.6	3.7	< 9.7	139.6	87.0	75.9	16.7
30/09/98	4.6	236.1	93.6	108.1	1402.7	389.0	87.0	1503.9	30.2	< 9.7	67.1	235.0	24.5	2.3
07/10/98	5.4	62.3	< 2.1	< 2.1	493.4	134.9	33.4	571.1	9.7	< 9.7	2.9	82.0	3.6	25.8
14/10/98	5.1	34.7	3.1	< 2.1	257.0	77.4	20.1	280.2	5.3	< 9.7	3.8	47.0	7.9	45.8
21/10/98	5.0	34.2	2.7	< 2.1	244.5	72.2	18.9	267.9	4.8	< 9.7	4.8	46.0	8.9	36.5
28/10/98	5.4	40.4	< 2.1	< 2.1	310.8	89.3	22.3	338.3	6.1	< 9.7	2.9	56.0	4.0	44.1
04/11/98	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5
11/11/98	4.6	41.3	27.9	13.5	203.2	52.3	13.0	224.4	3.8	< 9.7	16.8	49.0	27.5	23.6
18/11/98	5.3	12.5	13.0	5.3	53.1	21.9	19.5	55.3	1.5	< 9.7	6.1	13.0	5.4	5.8
25/11/98	5.3	26.6	7.1	7.3	172.1	57.9	27.7	203.2	3.7	< 9.7	5.8	31.0	5.2	7.3
02/12/98	5.2	57.9	5.8	8.0	414.5	116.7	30.2	480.0	7.8	< 9.7	8.0	70.0	5.6	8.4
09/12/98	5.4	24.2	3.9	4.4	163.2	60.0	18.4	193.2	3.2	< 9.7	4.5	29.0	3.7	16.7
16/12/98	5.4	60.4	5.5	10.2	438.0	118.7	35.9	500.7	8.8	< 9.7	7.6	74.0	3.7	4.4
23/12/98	5.2	31.0	7.1	3.5	225.4	73.3	19.7	242.8	4.2	< 9.7	3.9	42.0	6.6	22.4
30/12/98	5.1	39.9	23.5	12.3	282.0	83.7	25.5	309.8	6.0	< 9.7	6.0	54.0	8.7	10.8
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total rainfall
5140	5.0	41.0	15.5	12.7	201.9	60.8	20.1	225.3	4.1	< 6.7	16.6	43.0	14.4	699.6

Appendix 2
Annual Data, 1986 to 1998

TABLES OF ANNUAL MEAN CONCENTRATIONS AND TOTAL RAINFALL, 1986 TO 1998

Table II.1. Precipitation-weighted annual mean acidity, 1986 to 1998 (meq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	20	23	15	19	14	26	15	17	20	18	19	20	14
Yarner Wood	17	20	14	20	13	17	18	17	18	15	18	18	12
Barcombe Mills	19	22	13	15	12	20	17	24	16	16	14	16	11
Compton	25	28	16	25	14	18	35	34	23	13	7	12	11
Flatford Mill	33	43	35	35	27	43	36	25	27	30	25	26	25
Woburn	45	50	37	37	28	35	37	27	30	22	15	24	25
Tycanol Wood	16	17	15	18	14	21	21	17	14	14	16	13	11
Llyn Brianne	16	21	18	19	17	24	20	19	16	12	14	15	12
Pumlumon	-	-	-	14	12	16	18	19	13	14	15	12	9
Stoke Ferry	35	36	30	40	18	22	30	27	18	24	16	19	18
Preston Montford	18	25	24	36	14	27	38	35	30	27	19	16	8
Bottesford	61	76	81	48	42	62	68	62	36	29	22	22	20
Beddgelert	17	19	17	15	12	16	14	18	12	11	12	-	
Llyn Llydaw												11	11
Wardlow Hay Cop	29	45	33	37	24	33	34	36	27	28	22	18	16
Driby	42	43	42	47	41	41	45	35	36	37	18	22	34
Jenny Hurn	89	100	85	63	53	80	81	67	39	58	54	55	45
Thorganby	75	73	88	84	64	55	82	80	44	51	44	29	43
High Muffles	58	63	72	55	55	58	59	47	42	41	40	33	35
Bannisdale	30	27	28	24	18	22	25	31	19	17	20	16	15
Hillsborough Forest	-	-	-	13	7	12	12	17	12	8	13	6	7
Lough Navar	11	9	10	10	8	6	8	11	7	8	6	7	5
Cow Green Reservoir	27	31	34	23	21	24	28	33	21	17	24	11	16
Loch Dee	29	23	19	15	15	19	17	22	15	13	19	11	10
Redesdale	41	44	52	32	30	33	42	31	31	25	33	27	25
Eskdalemuir	21	25	27	20	24	22	22	26	17	16	17	17	14
Whiteadder	40	36	47	35	31	36	45	34	33	32	31	32	23
Balquhidder	21	32	24	20	16	22	20	24	22	18	29	15	15
Polloch	-	-	-	-	-	14	14	15	13	12	16	10	8
Glen Dye	-	45	46	36	39	44	41	35	42	41	56	32	28
River Mharcaidh	22	22	21	20	18	17	17	17	18	16	19	16	11
Strathvaich Dam	-	16	16	13	11	15	20	13	11	10	13	12	10
Achanarras	10	19	25	25	19	20	24	22	17	16	21	21	14

Table II.2. Precipitation-weighted annual mean non-marine sulphate, 1986 to 1998 (μeq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	30	34	21	29	24	36	22	29	26	24	31	25	17
Yarner Wood	27	37	22	27	19	28	25	28	28	24	33	27	18
Barcombe Mills	46	50	40	44	38	52	43	33	36	33	38	25	30
Compton	78	104	64	60	58	63	63	48	55	49	61	42	38
Flatford Mill	90	71	67	80	58	71	53	41	50	52	52	41	43
Woburn	73	80	85	73	66	63	57	44	59	46	56	39	42
Tycanol Wood	27	26	23	26	22	31	27	22	22	22	27	19	18
Llyn Brianne	24	29	26	27	27	30	28	26	26	22	26	20	19
Pumlumon	-	-	-	19	19	24	24	23	18	21	23	17	14
Stoke Ferry	80	76	66	84	81	77	67	54	61	50	52	49	43
Preston Montford	45	60	56	60	37	66	64	48	52	60	49	32	26
Bottesford	90	93	109	83	66	75	73	57	63	55	54	43	45
Beddgelert	53	33	24	22	19	23	22	24	20	20	24	-	
Llyn Llydaw												14	16
Wardlow Hay Cop	71	92	83	80	73	85	73	71	76	65	78	59	50
Driby	69	74	77	79	80	78	65	49	62	70	49	42	53
Jenny Hurn	110	106	121	98	89	83	77	60	80	65	81	58	70
Thorganby	85	80	88	87	82	119	88	79	72	56	69	62	60
High Muffles	63	74	82	73	67	75	71	56	60	51	65	47	49
Bannisdale	41	38	45	40	41	38	42	45	37	37	44	31	30
Hillsborough Forest	-	-	-	52	36	42	41	40	45	33	45	26	29
Lough Navar	19	16	14	18	14	18	17	18	16	16	17	15	12
Cow Green Reservoir	35	39	44	35	33	34	38	40	31	31	37	26	26
Loch Dee	32	35	36	24	26	28	27	28	25	24	36	18	19
Redesdale	58	46	62	47	36	43	46	35	42	37	51	37	34
Eskdalemuir	31	30	33	28	31	30	28	29	28	28	28	24	20
Whiteadder	53	48	61	46	33	45	50	37	40	43	44	33	27
Balquhidder	26	33	28	24	22	27	23	26	22	21	38	21	19
Polloch	-	-	-	-	-	17	17	14	16	14	18	11	10
Glen Dye	-	48	49	41	39	45	43	38	46	41	62	31	29
River Mharcaidh	24	24	20	19	15	16	16	16	18	14	23	13	11
Strathvaich Dam	-	16	14	12	10	13	18	11	9	10	16	12	9
Achanarras	24	33	31	29	22	24	25	20	19	19	25	21	17

Table II.3. Precipitation-weighted annual mean nitrate, 1986 to 1998 (meq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	19	27	16	22	20	31	17	23	24	23	28	28	18
Yarner Wood	16	24	14	18	13	19	16	20	25	21	31	27	14
Barcombe Mills	27	31	25	30	24	36	25	19	29	28	28	23	21
Compton	38	46	38	36	28	36	39	28	34	28	36	33	29
Flatford Mill	39	45	43	56	38	44	40	30	37	39	38	36	39
Woburn	39	40	39	47	35	40	36	31	47	35	39	35	35
Tycanol Wood	12	15	12	15	11	18	14	12	16	15	18	16	11
Llyn Brianne	12	14	13	14	16	18	16	14	18	16	17	17	12
Pumlumon	-	-	-	10	9	14	13	13	12	15	16	14	7
Stoke Ferry	48	44	39	55	46	48	43	36	43	39	37	41	38
Preston Montford	22	32	26	31	20	35	38	27	32	38	33	24	19
Bottesford	41	41	44	50	34	43	36	34	40	33	34	33	30
Beddgelert	17	16	13	11	10	12	10	14	13	15	15	-	
Llyn Llydaw												11	10
Wardlow Hay Cop	25	36	31	36	26	38	29	33	35	33	40	30	24
Driby	39	44	47	48	46	50	46	38	49	50	39	40	45
Jenny Hurn	44	48	44	51	43	45	42	33	47	42	45	38	45
Thorganby	41	43	42	49	40	50	42	46	40	37	38	38	34
High Muffles	37	43	47	45	38	47	37	36	42	38	43	35	36
Bannisdale	20	18	21	19	17	21	19	23	22	21	25	22	18
Hillsborough Forest	-	-	-	26	16	23	16	21	23	21	29	19	16
Lough Navar	8	8	7	9	7	9	9	10	15	12	10	12	6
Cow Green Reservoir	19	21	25	20	20	21	23	25	21	22	24	18	18
Loch Dee	14	19	18	14	14	16	15	19	18	16	22	14	13
Redesdale	34	26	33	31	26	31	36	26	32	27	33	35	30
Eskdalemuir	15	18	19	18	15	19	16	19	19	19	20	20	15
Whiteadder	34	29	42	34	23	32	35	29	34	31	35	30	24
Balquhidder	13	21	16	13	10	17	13	18	17	14	24	16	13
Polloch	-	-	-	-	-	9	9	9	11	10	10	8	5
Glen Dye	-	31	32	31	29	33	28	33	42	36	42	29	27
River Mharcaidh	10	12	10	10	9	10	8	7	15	11	14	11	9
Strathvaich Dam	-	10	8	7	6	9	9	8	9	9	10	10	6
Achanarras	14	22	24	25	18	22	16	18	21	18	22	21	15

Table II.4. Precipitation-weighted annual mean ammonium, 1986 to 1998 (μeq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	17	22	12	18	16	24	15	30	13	17	25	21	10
Yarner Wood	15	28	14	19	13	22	17	23	25	20	37	26	14
Barcombe Mills	38	41	38	39	35	50	31	16	30	33	32	22	18
Compton	70	73	46	56	55	63	57	40	53	53	79	53	48
Flatford Mill	-	50	49	66	44	59	40	31	40	48	49	38	43
Woburn	54	50	52	56	43	52	41	35	55	48	63	40	36
Tycanol Wood	13	15	13	15	14	19	13	11	15	18	22	15	12
Llyn Brianne	12	13	14	16	16	20	18	15	16	18	19	15	13
Pumlumon	-	-	-	13	13	17	20	14	13	21	18	16	10
Stoke Ferry	65	60	56	75	69	74	54	43	61	53	56	55	49
Preston Montford	47	57	49	53	44	57	57	36	50	54	60	38	36
Bottesford	56	45	49	68	54	48	40	33	55	48	56	45	45
Beddgelert	14	11	12	15	14	13	15	14	11	14	17	-	
Llyn Llydaw												10	11
Wardlow Hay Cop	34	40	39	39	40	57	45	39	47	46	58	38	33
Driby	53	60	64	53	67	76	55	42	48	64	54	49	49
Jenny Hurn	64	51	53	64	64	65	45	28	55	50	66	53	61
Thorganby	59	56	61	65	80	124	82	-	57	60	57	59	53
High Muffles	40	46	54	53	48	64	44	40	50	48	61	44	45
Bannisdale	35	27	30	30	32	34	27	31	32	36	40	33	27
Hillsborough Forest	-	-	-	60	45	48	40	43	49	43	62	40	38
Lough Navar	11	9	8	11	8	9	12	11	11	16	14	14	9
Cow Green Reservoir	20	19	25	23	24	26	25	28	21	30	26	27	20
Loch Dee	21	34	21	20	21	24	28	21	23	19	27	17	17
Redesdale	41	15	23	34	24	32	30	21	30	33	44	37	32
Eskdalemuir	20	16	19	22	18	26	17	18	21	26	24	24	18
Whiteadder	30	20	35	32	17	30	27	22	24	28	33	24	21
Balquhidder	14	15	12	14	11	16	16	15	12	12	24	18	14
Polloch	-	-	-	-	-	8	8	5	6	7	7	6	5
Glen Dye	-	26	29	28	25	32	22	28	33	29	43	23	22
River Mharcaidh	6	10	3	7	5	5	4	4	8	5	7	5	5
Strathvaich Dam	-	4	3	4	3	5	5	4	4	5	5	6	4
Achanarras	11	35	21	18	15	26	9	8	12	15	14	13	13

Table II.5. Precipitation-weighted annual mean sodium, 1986 to 1998 (μeq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	264	206	212	276	506	327	238	227	265	270	313	284	292
Yarner Wood	98	125	150	166	245	140	104	101	123	128	127	118	127
Barcombe Mills	186	255	153	204	359	137	128	98	147	176	195	164	154
Compton	54	67	70	84	129	71	40	55	64	64	76	77	58
Flatford Mill	99	60	54	79	79	70	57	54	73	79	76	60	59
Woburn	71	65	50	60	87	54	28	41	56	51	61	58	36
Tycanol Wood	116	90	104	232	232	163	120	119	164	157	146	159	145
Llyn Brianne	94	68	83	112	152	111	72	97	90	84	94	96	90
Pumlumon	-	-	-	104	141	102	72	69	73	79	81	113	95
Stoke Ferry	74	49	50	58	84	75	57	53	54	46	71	55	56
Preston Montford	86	38	86	39	100	164	38	66	58	64	35	80	40
Bottesford	82	35	59	47	62	54	35	35	39	49	58	27	33
Beddgelert	126	75	122	134	193	162	95	111	98	129	97	-	
Llyn Llydaw												107	88
Wardlow Hay Cop	71	52	90	57	140	131	57	95	94	66	82	60	65
Driby	95	53	64	98	91	103	67	70	83	100	121	58	77
Jenny Hurn	97	47	80	68	104	55	37	47	53	54	73	36	61
Thorganby	74	50	52	69	90	96	50	51	52	51	59	45	67
High Muffles	61	63	67	95	83	103	78	111	88	113	153	82	106
Bannisdale	122	62	133	116	161	182	91	106	95	129	95	156	101
Hillsborough Forest	-	-	-	89	140	107	72	87	125	108	107	78	97
Lough Navar	248	102	317	139	261	192	133	187	174	125	116	131	136
Cow Green Reservoir	74	40	69	76	90	84	74	72	77	93	91	99	89
Loch Dee	116	54	136	132	147	123	86	79	92	106	91	109	91
Redesdale	114	44	66	91	67	80	59	73	76	75	93	55	65
Eskdalemuir	86	37	62	81	86	2	53	63	77	88	63	66	76
Whiteadder	112	53	83	92	78	59	79	103	120	100	121	93	80
Balquhidder	122	45	59	110	100	89	61	145	120	71	122	87	81
Polloch	-	-	-	-	-	213	118	204	155	168	148	127	161
Glen Dye	-	52	73	83	81	78	65	86	108	98	121	112	91
River Mharcaidh	90	37	45	88	62	46	57	143	92	57	66	70	65
Strathvaich Dam	-	83	109	126	174	147	121	212	154	102	130	116	122
Achanarras	231	145	217	277	212	235	186	224	217	169	219	167	202

Table II.6. Precipitation-weighted annual mean magnesium, 1986 to 1998 (meq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	61	48	49	63	19	77	57	54	64	73	86	82	87
Yarner Wood	23	30	35	38	58	32	26	28	33	38	37	35	41
Barcombe Mills	44	62	35	49	85	34	33	28	40	48	58	48	48
Compton	13	19	21	21	31	18	11	15	18	20	25	26	26
Flatford Mill	32	17	16	23	22	19	15	15	18	20	21	17	20
Woburn	9	11	13	18	24	14	9	12	15	15	18	18	13
Tycanol Wood	27	21	24	53	54	39	29	31	43	45	43	45	48
Llyn Brianne	21	16	20	27	36	27	19	26	25	24	29	27	32
Pumlumon	-	-	-	24	32	23	19	20	23	25	25	33	35
Stoke Ferry	20	12	13	16	23	18	16	15	16	12	21	16	19
Preston Montford	21	11	22	11	24	43	11	18	20	42	15	25	25
Bottesford	26	11	18	16	18	16	11	10	12	14	16	10	14
Beddgelert	29	18	26	31	44	37	24	29	28	37	31	-	
Llyn Llydaw												32	33
Wardlow Hay Cop	18	15	25	17	35	32	15	25	27	18	24	18	23
Driby	24	14	18	27	27	26	18	22	22	26	34	18	23
Jenny Hurn	36	16	30	25	35	21	14	16	22	19	24	13	22
Thorganby	22	16	17	23	27	31	16	15	19	15	19	16	23
High Muffles	15	17	19	23	29	27	19	30	23	29	39	21	30
Bannisdale	29	15	33	27	38	43	23	27	27	35	27	41	32
Hillsborough Forest	-	-	-	21	31	24	20	25	36	34	29	27	42
Lough Navar	57	24	80	32	60	47	34	48	48	38	37	40	53
Cow Green Reservoir	17	10	17	18	22	20	19	19	22	25	25	29	29
Loch Dee	29	12	31	31	35	29	22	22	25	31	28	34	35
Redesdale	26	12	19	23	18	19	15	20	21	21	27	17	21
Eskdalemuir	20	9	15	20	21	25	14	17	22	26	20	20	30
Whiteadder	26	13	22	23	20	15	19	26	33	26	31	26	25
Balquhidder	29	11	14	26	24	21	16	37	31	22	33	24	28
Polloch	-	-	-	-	-	48	30	52	40	46	41	37	54
Glen Dye	-	12	18	21	21	19	16	22	26	25	30	28	26
River Mharcaidh	21	8	12	20	15	11	14	35	24	16	20	19	23
Strathvaich Dam	-	20	25	28	39	32	31	51	42	31	40	33	42
Achanarras	55	37	46	64	49	54	46	56	58	45	59	43	61

Table II.7. Precipitation-weighted annual mean calcium, 1986 to 1998 (μeq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	16	15	14	18	31	22	18	18	19	24	23	21	27
Yarner Wood	11	15	12	13	17	15	12	13	18	18	16	16	20
Barcombe Mills	20	29	22	30	33	32	22	20	28	29	37	25	49
Compton	23	51	33	22	32	30	23	20	34	41	55	34	61
Flatford Mill	33	21	27	37	29	24	18	21	25	21	22	18	26
Woburn	23	30	38	28	32	24	19	18	24	21	34	23	28
Tycanol Wood	12	9	9	31	17	13	11	10	14	17	16	15	19
Llyn Brianne	7	8	9	10	15	10	10	10	12	12	12	11	17
Pumlumon	-	-	-	7	11	11	9	7	9	12	10	12	14
Stoke Ferry	31	22	24	28	45	33	32	25	30	22	35	34	33
Preston Montford	14	19	19	14	14	37	18	17	24	76	28	18	34
Bottesford	36	33	50	33	23	29	19	17	23	29	25	21	31
Beddgelert	9	10	13	9	12	11	11	11	14	18	13	-	-
Llyn Llydaw												11	14
Wardlow Hay Cop	47	59	56	55	75	57	55	52	64	55	69	64	89
Driby	18	19	27	34	33	27	18	19	28	35	30	21	26
Jenny Hurn	56	45	73	48	50	39	27	26	60	31	35	23	44
Thorganby	25	25	30	37	35	67	27	24	67	29	32	33	53
High Muffles	13	21	23	27	20	23	21	19	25	26	23	21	20
Bannisdale	13	12	14	13	15	16	15	14	16	17	16	17	20
Hillsborough Forest	-	-	-	13	14	17	16	15	24	25	24	21	36
Lough Navar	17	10	21	12	18	25	19	24	27	26	25	23	29
Cow Green Reservoir	7	8	12	12	13	11	13	12	13	16	14	13	16
Loch Dee	10	9	11	9	11	10	11	9	11	14	10	12	23
Redesdale	12	10	20	18	11	14	13	10	18	13	16	13	13
Eskdalemuir	7	5	8	21	8	10	8	9	14	13	8	10	17
Whiteadder	14	14	20	16	11	13	12	12	18	19	15	13	14
Balquhidder	8	5	6	9	8	11	8	11	10	9	10	9	16
Polloch	-	-	-	-	-	16	13	13	14	13	12	11	20
Glen Dye	-	7	10	11	9	9	10	10	12	10	10	10	10
River Mharcaidh	10	8	7	8	7	6	9	11	12	7	11	9	13
Strathvaich Dam	-	7	7	8	13	9	10	13	14	11	15	11	16
Achanarras	16	15	20	20	21	17	17	18	18	17	18	15	20

Table II.8. Precipitation-weighted annual mean chloride, 1986 to 1998 (meq l^{-1})

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

Table II.9. Precipitation-weighted annual mean sulphate, 1986 to 1998 (μeq l^{-1})

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	61	59	47	63	85	75	50	57	58	56	69	59	53
Yarner Wood	39	52	40	47	49	44	38	40	43	39	48	41	34
Barcombe Mills	68	80	58	68	82	68	58	45	54	54	61	45	48
Compton	84	112	72	70	73	71	67	55	63	57	70	51	45
Flatford Mill	102	78	73	89	67	79	59	48	58	62	61	48	50
Woburn	82	86	91	81	76	70	60	49	66	52	63	46	46
Tycanol Wood	41	37	36	54	50	51	41	37	42	40	45	38	36
Llyn Brianne	36	37	36	40	46	43	36	38	37	32	38	31	30
Pumlumon	-	-	-	32	35	34	32	31	27	30	33	31	26
Stoke Ferry	89	82	72	91	91	86	74	60	68	56	61	55	49
Preston Montford	56	65	66	65	49	85	69	56	59	68	53	42	31
Bottesford	100	98	116	89	73	82	77	62	67	61	61	47	49
Beddgelert	61	39	39	38	42	43	34	38	32	35	35	-	
Llyn Llydaw												27	27
Wardlow Hay Cop	80	98	94	86	90	100	80	83	87	73	88	66	58
Driby	80	80	85	91	91	90	73	58	72	82	64	49	62
Jenny Hurn	121	112	130	107	101	90	81	66	86	72	90	62	78
Thorganby	94	86	94	96	93	126	94	85	78	62	76	68	69
High Muffles	70	82	90	85	77	87	80	69	70	65	83	57	62
Bannisdale	56	45	61	54	60	60	53	57	48	53	55	50	42
Hillsborough Forest	-	-	-	62	53	55	50	51	60	46	58	36	41
Lough Navar	48	28	34	34	46	41	33	40	37	31	31	31	28
Cow Green Reservoir	44	43	53	44	44	44	47	49	40	43	48	38	36
Loch Dee	47	41	52	39	43	42	37	38	36	37	47	31	29
Redesdale	72	51	70	58	44	52	53	44	51	46	63	44	42
Eskdalemuir	41	35	41	38	42	43	34	37	38	38	36	32	30
Whiteadder	66	55	72	58	42	52	59	49	54	55	58	44	37
Balquhidder	41	39	35	37	34	38	31	43	38	30	52	31	29
Polloch	-	-	-	-	-	42	31	39	34	33	36	26	30
Glen Dye	-	54	58	51	49	54	51	48	60	53	76	44	40
River Mharcaidh	35	29	26	29	23	22	23	32	29	21	31	22	19
Strathvaich Dam	-	26	27	27	31	30	33	35	28	22	32	26	24
Achanarras	52	50	57	63	48	52	47	47	45	40	51	41	41

Table II.10. Annual Rainfall* Measured at the Secondary Network Sites, 1986 to 1998 (mm)

	86	87	88	89	90	91	92	93	94	95	96	97	98
Goonhilly	907	879	910	753	790	800	776	1008	999	744	743	1000	936
Yarner Wood	1150	1015	1123	1131	1174	1058	1049	1398	1333	1135	1007	1218	1383
Barcombe Mills	740	849	678	597	639	620	653	738	806	652	539	818	733
Compton	586	629	530	550	407	449	709	644	586	647	392	576	642
Flatford Mill	528	660	532	392	393	362	510	518	438	335	231	409	493
Woburn	758	672	592	540	400	478	694	655	505	515	328	456	620
Tycanol Wood	1508	1318	1385	1340	1437	1422	1572	1692	1460	1320	1366	1589	1505
Llyn Brianne	1491	1497	1434	1417	1483	1224	1488	1573	1474	1143	1195	1296	1737
Pumlumon	-	-	-	1896	1936	1908	2129	2123	2445	1622	1554	1780	2641
Stoke Ferry	503	617	537	495	348	350	508	601	479	375	318	519	517
Preston Montford	539	570	514	580	538	443	554	585	520	409	403	550	590
Bottesford	545	651	531	469	434	377	557	651	526	327	289	596	573
Beddgelert	2758	2231	2794	2480	2394	2028	3013	2152	2375	2097	827	0	
Llyn Llydaw												2068	2777
Wardlow Hay Cop	928	889	837	708	711	617	849	852	977	581	530	853	1018
Driby	702	685	605	457	473	398	676	636	513	375	415	578	620
Jenny Hurn	518	652	409	443	351	354	505	546	452	460	301	423	530
Thorganby	503	625	516	364	434	329	511	485	496	395	348	477	448
High Muffles	711	875	855	599	806	626	836	947	740	670	693	827	980
Bannisdale	2249	2101	2091	1699	2270	1857	2027	1794	2290	1690	1328	1771	2167
Hillsborough Forest	-	-	-	642	909	668	635	802	614	742	662	824	777
Lough Navar	1439	1144	1492	1242	1617	1459	1977	1517	1631	1521	1373	1395	1686
Cow Green Reservoir	1129	1216	1138	858	1165	957	1073	1118	1293	807	1149	1058	1353
Loch Dee	2373	2311	2619	2001	2574	2196	2659	1950	2393	2036	1928	2269	2473
Redesdale	745	828	832	499	724	581	662	585	541	507	444	437	843
Eskdalemuir	1523	1275	1396	1236	1528	1248	1609	1330	1631	1202	1211	1487	1700
Whiteadder	584	718	712	489	721	569	665	722	566	473	395	546	750
Balquhidder	2008	1428	1736	1967	2398	1683	1814	1575	1547	1637	1096	1579	1540
Polloch	-	-	-	-	-	2021	2355	1790	2012	1788	1606	1904	2250
Glen Dye	-	898	1067	659	809	691	758	969	637	724	740	1049	1005
River Mharcaidh	777	664	761	638	907	729	757	826	714	678	477	601	846
Strathvaich Dam	-	959	1205	1357	1713	1396	1609	1147	1272	1282	885	1200	1458
Achanarras	889	864	642	476	776	512	635	567	535	622	488	478	700

* All samples including those with phosphate contamination

Appendix 3
Geostatistics

APPENDIX 3 - 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 some time period, usually one or more years, is treated as a regionalised random variable. It is assumed that the values at the sites are drawn from the distribution of a random variable with a constant mean. The variance, however, depends on the separation of the sites. For example, within one 20 km grid square the variance would probably be smaller than within a 200 km square. The dependence of the variance on separation (usually termed the lag) is described by a quantity known as the semi-variance:

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

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

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

exponential

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

spherical

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

linear

$$g(h) = c_0 + w h^q \quad \textbf{4}$$

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

Once a variogram model has been found it can be used in an interpolation procedure known as kriging to produce contour maps from irregularly spaced data. In the kriging process the interpolated value is expressed as a linear combination of the measured data $l_1 z_1 + l_2 z_2 + \ldots$. Using the variogram model the variance of the interpolated estimate can be expressed in terms of the l_i and this variance is then minimised subject to the constraint that the l_i sum to 1. The result is the best unbiased linear estimate in that it has the smallest error in the statistical sense. A further advantage of using kriging is that the interpolation variance is known for each interpolated estimate and this can be mapped along with the concentration to provide a measure of the reliability of the map.

The models fitted to the experimental points in the variograms for $\log_e$ acidity, non-marine sulphate, nitrate and ammonium are listed in Table III.1.

Table III.1. Variogram models fitted to 1998 annual mean concentrations of the major ions.

ion	model	sill $(\mu eq\ l^{-1})^2$	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, 1998

Appendix 4.1
Sulphur Dioxide Data, 1998

Monthly and annual means - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

Site	Jan-98	Feb-98	Mar-98	Apr-98	May-98	Jun-98	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Annual Mean
5002	0.67	0.34	0.54	0.71	0.70	0.46	0.26	0.35	0.78	0.39	0.71	0.53	0.54
5004	3.42	3.21	2.59	1.76	1.85	1.10	1.69	1.47	1.62	1.73	2.08	1.74	2.01
5006	0.31	0.30	0.30	0.38	0.38	0.31	0.14	0.17	0.43	0.31	0.26	0.23	0.30
5007	2.10	1.62	1.16	0.36	0.99	0.51	0.62	0.74	0.75	0.69	1.20	1.20	1.02
5008	1.34	0.80	0.61	0.49	1.50	0.57	0.31	0.36	0.55	0.48	0.48	0.40	0.66
5009	5.12	2.09	2.89	2.22	1.88	1.78	0.89	0.51	1.86	0.77	0.39	0.42	1.74
5010	0.29	0.25	0.27	0.38	0.42	0.34	0.04	0.17	0.57	0.41	0.28	0.20	0.31
5011	0.91	0.42	0.47	0.63	0.31	1.35	0.13	0.28	0.52	0.22	0.66	0.57	0.46

Site 5002 Eskdalemuir - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

Month			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date														
1	-	2	0.30	0.45	0.30	0.14	0.51	0.45	0.37	0.30	0.79	0.29	0.30	0.89
2	-	3	0.22	0.86	0.19	0.34	0.66	0.31	0.24	0.34	0.67	0.24	0.62	0.36
3	-	4	0.19	0.68	0.19	1.42	1.11	0.35	0.60	0.16	0.77	0.75	0.69	1.08
4	-	5	0.50	0.32	0.63	0.37	0.44	0.62	-0.10	-0.14	0.89	0.25	0.75	1.73
5	-	6	0.28	0.28	0.29	0.43	0.22	1.59	0.13	0.41	0.90	0.29	0.35	0.87
6	-	7	0.71	0.50	0.96	0.39	0.25	0.59	0.47	-0.11	2.44	0.22	0.31	1.25
7	-	8	0.35	0.35	0.24	0.31	0.24	0.20	0.52	0.22	0.42	1.89	0.69	0.44
8	-	9	0.31	0.26	0.40	0.17	0.60	0.31	0.15	0.44	0.32	0.69	0.31	0.33
9	-	10	0.28	0.24	2.32	0.23	0.64	0.26	0.13	1.08	0.54	0.24	0.42	0.76
10	-	11	1.06	0.30	0.71	0.91	0.71	0.41	0.41	0.65	0.24	0.42	0.21	0.27
11	-	12	0.34	0.19	0.69	0.70	0.28	0.42	0.20	0.43	0.22	0.26	1.05	0.48
12	-	13	0.38	0.14	0.30	1.00	0.25	0.77	0.46	-0.12	0.43	0.37	0.62	0.21
13	-	14	1.26	0.22	0.23	0.50	0.40	1.26	-0.12	-0.13	0.63	0.37	0.24	0.26
14	-	15	0.30	0.20	0.28	1.32	3.48	0.31	0.13	-0.13	0.43	0.20	0.42	0.26
15	-	16	0.33	0.38	0.90	0.64	1.69	0.27	-0.16	0.22	0.27	0.50	1.98	0.37
16	-	17	0.37	0.92	0.25	1.31	0.79	0.34	0.32	0.18	0.21	0.33	0.36	0.28
17	-	18	0.33	0.16	0.23	0.42	2.27	0.30	0.13	0.28	0.47	0.46	3.24	0.30
18	-	19	0.62	0.47	0.46	0.32	1.46	0.44	0.16	-0.14	0.46	0.29	1.77	-0.17
19	-	20	0.84	0.24	0.34	2.91	0.30	0.23	0.16	0.18	1.32	0.32	2.44	0.44
20	-	21	2.13	0.51	0.28	0.42	0.35	1.61	0.18	0.20	0.53	0.34	1.33	1.43
21	-	22	0.94	0.38	0.38	1.06	0.95	0.38	0.18	0.77	1.48	0.34	0.45	-
22	-	23	0.81	0.26	1.26	0.88	0.47	0.26	0.29	0.17	2.80	0.37	0.37	0.39
23	-	24	0.37	0.19	1.00	0.49	0.35	0.21	0.22	0.37	0.64	0.40	0.54	0.27
24	-	25	0.20	0.22	0.28	0.29	0.32	0.27	1.22	0.35	1.05	0.27	0.25	0.21
25	-	26	0.38	0.38	0.24	0.41	0.40	0.34	0.16	0.77	0.55	0.26	0.29	0.22
26	-	27	0.37	0.20	0.36	0.23	0.69	0.43	0.25	0.75	0.75	0.31	0.24	0.13
27	-	28	0.35	0.15	0.28	0.35	0.38	0.20	0.26	0.28	0.28	0.35	0.32	0.13
28	-	29	0.30	0.18	0.48	0.78	0.29	0.25	0.32	0.21	1.30	0.21	0.30	0.25
29	-	30	3.35		1.83	2.02	0.30	0.21	-0.12	1.05	1.13	0.29	0.29	1.31
30	-	31	1.22		0.29	0.45	0.39	0.29	0.26	0.56	0.56	0.22	0.26	0.35
31	-	1	1.43		0.24		0.65		0.39	0.99		0.26		0.74

Site 5004 Stoke Ferry - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

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

Site 5006 Lough Navar - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.32	0.28	0.23	2.21	0.36	0.42	0.13	0.15	0.24	0.29	0.28	0.20
2	- 3	0.28	0.24	0.19	1.27	0.19	0.37	0.22	0.23	0.19	0.35	0.44	0.33
3	- 4	0.27	0.37	0.25	0.31	0.22	0.49	0.23	0.25	0.34	1.20	0.30	-0.14
4	- 5	-0.13	0.29	0.24	0.74	0.25	0.65	0.21	0.21	0.18	0.51	0.30	0.22
5	- 6	-	0.24	0.20	0.17	0.27	0.90	0.17	0.18	0.21	0.33	0.26	-0.16
6	- 7	-	0.33	0.19	0.26	0.23	0.25	-0.11	0.13	0.35	0.27	0.32	0.24
7	- 8	-	0.52	0.26	0.73	0.31	0.26	0.13	-	0.31	0.23	0.29	0.37
8	- 9	-	0.25	0.30	0.20	0.19	0.22	-0.14	-	0.22	0.25	0.25	0.33
9	- 10	-	0.21	-	0.24	0.25	0.27	-0.12	-	0.29	0.22	0.28	0.37
10	- 11	-	0.34	0.25	0.23	0.26	0.23	-0.12	0.25	0.19	0.28	0.26	0.26
11	- 12	-0.13	0.20	0.20	0.19	0.65	0.31	-0.11	0.20	0.21	0.27	0.26	0.24
12	- 13	0.57	0.23	0.23	0.19	0.46	0.27	-0.12	-0.11	0.20	0.27	0.35	0.26
13	- 14	0.43	0.50	0.23	0.24	1.06	0.29	-0.12	-0.15	0.23	0.26	0.22	-
14	- 15	0.30	0.38	0.24	0.26	0.28	0.62	0.25	-0.11	0.24	0.22	-0.19	0.22
15	- 16	0.42	0.33	0.35	0.27	0.27	0.21	0.23	0.17	0.27	0.18	0.26	0.32
16	- 17	0.33	0.31	0.30	0.26	0.24	0.22	0.16	-0.14	0.32	0.23	0.25	0.35
17	- 18	0.42	0.27	0.38	0.20	0.77	0.26	0.15	-0.12	0.47	0.19	0.34	0.36
18	- 19	0.22	0.21	0.29	0.25	0.52	0.35	0.21	0.17	0.27	0.30	0.19	0.19
19	- 20	0.24	0.34	0.32	0.19	0.59	0.38	-0.14	-0.12	0.42	0.25	0.28	-0.15
20	- 21	0.30	0.27	0.26	0.39	0.36	0.22	0.46	0.20	0.28	0.26	0.14	-0.18
21	- 22	0.23	0.32	0.24	0.16	0.31	0.30	0.28	0.18	0.53	0.29	0.16	0.37
22	- 23	0.16	0.37	0.66	0.20	0.37	0.24	0.27	0.13	0.55	0.24	-	0.32
23	- 24	0.39	0.31	0.41	0.26	0.30	0.23	0.26	0.16	0.75	0.28	0.23	0.38
24	- 25	0.25	0.29	0.23	0.24	0.33	0.22	0.23	0.29	1.67	0.27	0.19	0.37
25	- 26	0.24	0.37	0.29	0.44	0.32	0.22	0.26	0.23	1.55	0.28	0.22	0.47
26	- 27	0.22	0.28	0.35	0.18	0.34	0.17	-	0.18	0.38	0.32	0.25	-
27	- 28	0.74	0.22	0.62	0.17	0.33	0.22	0.17	0.20	0.32	0.29	0.27	-
28	- 29	0.62	0.26	0.32	0.18	0.65	0.19	0.15	0.26	0.43	0.45	0.62	-
29	- 30	0.36		0.39	0.23	0.27	0.23	0.12	0.34	0.31	0.20	0.23	-
30	- 31	0.31		0.23	0.45	0.47	0.19	0.21	0.49	1.06	0.26	0.30	0.30
31	- 1	0.24		0.34		0.46		0.19	0.43		0.28		-0.20

Site 5007 Barcombe Mills - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

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

Site 5008 Yarner Wood - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

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

Site 5009 High Muffles - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

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

Site 5010 Strathvaich Dam - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

Month			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date														
1	-	2	-0.38	1.01	0.58	-0.31	0.74	0.35	-	-0.27	-0.32	0.42	0.35	-
2	-	3	-0.41	0.58	0.73	0.73	0.32	0.48	0.28	-0.27	0.42	0.38	0.45	-
3	-	4	-0.39	0.49	-0.38	0.28	0.29	0.33	0.46	-0.28	0.38	0.84	-0.30	-
4	-	5	-0.40	0.44	-0.39	-0.28	0.32	0.34	0.27	-0.31	0.43	0.46	-0.30	-
5	-	6	0.51	-0.41	-0.38	0.29	0.33	1.74	0.41	-0.29	0.87	0.45	0.30	-
6	-	7	0.61	0.42	0.51	0.62	0.27	0.48	0.45	-0.29	1.25	0.37	0.30	-
7	-	8	0.45	0.40	0.43	0.34	0.27	0.40	-0.31	-0.29	1.82	0.36	0.37	-
8	-	9	0.97	0.42	0.39	-0.26	0.25	0.42	-0.30	-0.29	0.47	0.39	0.37	-
9	-	10	0.49	0.40	0.49	-0.25	0.36	0.41	0.30	-0.31	0.45	0.40	0.28	-
10	-	11	0.42	0.41	0.45	0.25	0.27	0.43	-0.31	0.57	0.64	0.36	0.39	-
11	-	12	0.59	0.43	0.43	0.71	0.39	-0.33	-0.28	-0.37	0.72	0.32	0.63	-
12	-	13	-0.41	-0.44	0.56	0.32	0.36	0.37	-0.27	-0.34	0.85	0.37	0.97	-
13	-	14	-0.41	-0.44	0.57	0.31	0.76	0.42	-0.28	-0.33	0.51	0.40	0.31	-
14	-	15	-0.43	0.45	0.47	0.40	0.72	0.35	-0.27	0.33	0.40	0.35	-0.31	-
15	-	16	0.39	0.82	0.57	0.40	0.37	-0.31	-0.27	-0.35	0.76	0.30	-0.30	0.32
16	-	17	-0.37	0.46	-0.35	0.29	0.35	-0.30	0.43	-0.36	0.54	0.39	-0.29	0.46
17	-	18	0.45	0.44	0.47	0.38	0.47	-0.28	0.37	-0.36	0.40	0.39	0.63	-0.29
18	-	19	-0.39	-0.42	-0.40	0.35	0.41	0.35	-0.30	0.48	0.36	0.38	0.74	-0.29
19	-	20	0.39	0.56	0.43	0.91	0.47	0.33	-0.30	0.35	0.45	0.35	1.67	-0.29
20	-	21	0.99	-0.41	0.47	0.67	0.42	0.61	0.31	0.30	0.51	0.47	0.50	-0.29
21	-	22	-0.43	0.68	0.41	1.10	0.46	-	0.29	0.33	0.55	0.38	-0.32	0.50
22	-	23	-0.43	-0.41	0.78	1.00	0.47	-	-0.30	0.70	0.54	0.33	-0.31	-0.30
23	-	24	0.51	-0.41	0.39	-0.26	0.43	-0.31	-0.30	0.37	0.91	0.45	-0.31	-0.29
24	-	25	0.40	-0.39	-0.40	0.26	0.41	0.34	-0.30	0.34	0.70	0.37	0.32	-0.29
25	-	26	0.56	0.36	-0.42	-0.26	0.40	0.37	-0.30	0.47	0.40	0.40	-0.28	-0.29
26	-	27	0.77	-0.37	-0.41	0.28	0.48	0.35	-0.31	0.43	0.43	0.38	0.37	0.30
27	-	28	0.68	0.38	0.42	0.27	0.41	0.32	0.24	0.46	0.42	0.38	0.42	-0.29
28	-	29	0.65	-0.39	-0.38	0.75	0.47	0.35	-0.23	0.38	0.44	0.53	-0.29	0.29
29	-	30	0.58		0.45	0.82	0.45	0.32	-0.27	0.40	0.37	0.63	-	1.28
30	-	31	0.45		0.40	0.51	0.45	-	-0.27	0.54	0.33	0.38	-	0.48
31	-	1	0.49		-0.34		0.35		-0.27	1.13		0.41		1.14

Site 5011 Glen Dye - sulfur dioxide as S (SO_2-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.46	0.26	0.46	0.33	-	0.28	-0.16	0.22	0.64	0.23	0.24	0.25
2	- 3	1.56	0.30	0.39	-0.18	0.17	0.29	0.25	0.50	0.47	0.29	0.30	-0.17
3	- 4	0.22	0.25	0.31	0.23	0.24	0.25	-0.12	0.28	0.43	0.16	0.39	-0.18
4	- 5	0.18	0.27	0.19	0.25	0.18	0.48	-0.13	0.21	0.50	0.17	0.22	-0.19
5	- 6	-0.17	0.21	0.19	0.27	0.28	0.82	-0.15	0.17	0.25	0.26	0.47	-0.17
6	- 7	0.86	2.04	0.28	0.57	0.24	0.25	-0.14	0.16	0.92	0.50	0.38	-0.18
7	- 8	1.77	0.24	0.17	0.23	0.22	0.40	-0.12	0.24	2.95	0.21	0.59	3.94
8	- 9	1.64	0.23	1.11	0.22	0.39	0.36	-0.14	-0.10	0.43	0.20	1.03	0.23
9	- 10	0.44	0.21	1.53	0.21	0.32	0.43	-0.14	0.34	0.76	0.29	0.39	0.97
10	- 11	2.08	1.20	0.50	0.18	0.34	0.20	-0.14	1.98	0.19	0.18	1.39	0.37
11	- 12	1.55	0.22	0.23	0.24	0.34	0.19	-0.12	0.84	0.33	0.17	0.57	0.45
12	- 13	1.65	0.19	0.18	0.20	0.32	0.22	-0.17	-0.14	0.29	0.21	0.23	0.19
13	- 14	0.42	0.26	0.20	0.25	0.56	0.26	-0.16	-0.15	0.21	0.29	0.20	0.44
14	- 15	0.21	0.20	0.19	0.26	0.95	0.40	0.19	0.17	0.25	0.18	0.21	0.21
15	- 16	0.49	1.26	0.21	0.24	-	0.26	0.27	-0.13	0.21	-0.17	0.20	-
16	- 17	0.28	0.24	0.23	0.27	0.20	0.37	0.44	0.17	0.25	0.23	-0.21	-
17	- 18	0.29	0.31	0.21	0.22	0.41	0.29	-0.16	-0.13	0.41	-0.17	2.99	-
18	- 19	0.25	0.31	0.17	0.25	0.30	0.40	-0.16	0.21	0.22	-0.18	1.08	0.18
19	- 20	0.26	1.10	0.16	0.62	0.28	0.54	0.30	-0.15	0.31	0.17	1.71	0.22
20	- 21	2.86	0.54	0.20	0.78	0.29	1.91	0.80	-0.15	0.46	0.64	2.36	2.16
21	- 22	8.10	0.24	0.17	3.61	0.32	0.56	0.93	-0.16	2.67	0.30	1.37	-
22	- 23	0.30	0.23	0.17	2.69	-	0.28	0.32	-0.14	0.66	0.21	0.75	0.28
23	- 24	0.17	0.19	1.75	0.79	0.20	0.31	-0.17	-0.17	0.16	0.29	0.18	-0.18
24	- 25	0.25	0.18	0.26	1.59	0.24	0.26	-0.14	-0.15	0.18	0.20	0.26	0.42
25	- 26	0.19	0.36	1.38	0.47	0.22	0.50	0.30	0.29	0.50	0.20	0.84	-0.18
26	- 27	0.49	0.23	-0.16	0.92	0.29	0.34	0.32	0.35	0.14	0.43	0.30	0.25
27	- 28	0.27	0.32	1.20	0.23	0.26	0.24	0.25	0.16	0.18	0.21	0.90	-0.18
28	- 29	0.37	0.26	1.02	2.08	0.39	0.19	0.19	0.90	0.21	0.24	0.20	0.27
29	- 30	0.19		0.96	0.64	0.32	0.20	0.30	0.34	0.33	0.20	-0.17	1.41
30	- 31	0.18		0.46	0.25	0.22	0.24	-0.18	0.52	0.22	0.22	0.24	1.68
31	- 1	0.45		0.28		0.22		0.31	1.43		0.23		2.11

Appendix 4.2
Particulate Sulphate Data, 1998

Monthly and annual means - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean
Eskdalemuir	0.51	0.58	0.62	0.58	0.82	0.52	0.36	0.46	1.35	0.26	0.35	0.50	0.58
Stoke Ferry	0.79	1.12	0.98	0.81	1.33	0.80	0.82	0.69	1.48	0.55	0.74	0.81	0.91
Lough Navar	0.70	0.42	0.46	0.45	0.89	0.50	0.27	0.35	1.00	0.32	0.25	0.23	0.49
Barcombe Mills	0.85	1.38	1.03	0.81	1.52	1.08	0.88	0.86	1.13	0.58	0.80	0.99	0.99
Yarner Wood	0.68	0.72	0.66	0.44	1.46	0.58	0.66	0.65	0.76	0.42	0.29	0.41	0.65
High Muffles	0.68	0.77	0.77	0.76	0.97	0.68	0.48	0.55	1.50	0.36	0.43	0.50	0.70
Strathvaich Dam	0.19	0.21	0.35	0.54	0.48	0.37	0.20	0.28	0.78	0.20	0.30	0.31	0.35
Glen Dye	0.35	0.34	0.44	0.70	0.55	0.46	0.27	0.38	1.17	0.19	0.29	0.34	0.46

Site 5002 Eskdalemuir - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date														
1	-	2	0.42	0.62	0.19	0.20	1.30	0.31	0.74	0.29	0.73	1.01	0.08	0.76
2	-	3	0.34	0.41	0.30	0.25	0.44	0.33	1.28	0.69	1.52	0.52	0.10	0.44
3	-	4	0.24	0.80	0.19	0.67	0.35	0.29	0.52	0.15	1.00	0.40	0.23	0.25
4	-	5	0.23	0.50	0.26	0.52	0.32	0.85	0.19	0.18	1.83	0.24	0.11	0.20
5	-	6	0.20	0.84	0.09	0.57	0.24	1.05	0.18	0.31	2.38	0.32	0.16	0.17
6	-	7	0.36	0.40	0.27	0.45	0.37	1.06	0.36	0.22	2.44	0.45	0.22	0.26
7	-	8	0.22	0.19	0.25	0.66	0.42	0.34	0.26	0.42	0.58	0.60	0.69	0.72
8	-	9	0.20	0.38	0.30	0.19	0.55	0.41	0.38	0.22	0.32	0.63	0.41	0.49
9	-	10	0.84	0.39	0.77	0.16	0.76	0.47	0.19	1.45	0.31	0.30	0.25	0.88
10	-	11	0.64	0.56	0.26	0.27	0.22	0.27	0.29	1.06	0.11	0.15	0.18	0.65
11	-	12	0.49	0.62	0.17	0.18	0.27	0.20	0.45	0.98	0.10	0.17	0.57	0.64
12	-	13	0.57	0.90	0.22	0.16	0.75	0.29	0.16	0.18	0.20	0.17	0.39	0.49
13	-	14	0.20	1.10	0.30	0.18	2.15	0.67	0.20	0.30	0.26	0.13	0.11	0.48
14	-	15	0.24	1.20	0.14	0.21	3.70	0.39	0.24	0.32	0.12	0.13	0.23	0.44
15	-	16	0.32	0.85	0.54	0.35	2.06	0.99	0.21	0.29	0.13	0.07	-0.03	0.50
16	-	17	0.16	0.20	0.80	0.40	1.38	0.59	0.48	0.37	0.09	0.23	0.11	0.97
17	-	18	0.48	0.68	0.37	0.47	1.74	0.41	0.23	0.09	0.21	0.12	0.51	1.35
18	-	19	0.21	1.41	0.27	0.92	1.19	0.59	0.21	0.37	0.40	0.23	0.54	0.31
19	-	20	0.21	0.84	0.34	1.96	1.21	0.54	0.59	0.65	1.27	0.08	0.85	0.22
20	-	21	0.29	1.54	0.45	0.79	1.05	1.08	0.37	0.10	1.12	0.19	0.71	0.25
21	-	22	0.77	0.17	0.76	0.93	0.47	0.74	0.45	0.17	1.81	0.46	0.79	-
22	-	23	0.42	0.20	2.78	1.02	1.13	0.41	0.41	0.14	3.77	0.59	0.64	0.46
23	-	24	0.18	0.19	2.99	0.91	0.47	0.36	0.20	0.31	2.49	0.11	0.82	0.42
24	-	25	0.27	0.28	0.35	0.55	0.28	0.45	0.21	0.15	3.42	0.16	0.46	0.27
25	-	26	0.40	0.51	0.38	0.31	0.26	0.48	0.29	0.35	2.83	0.08	0.24	0.32
26	-	27	0.97	0.34	0.27	0.35	0.35	0.36	0.45	0.38	2.40	0.10	0.33	0.29
27	-	28	1.55	0.17	0.87	0.25	0.28	0.37	0.41	0.15	3.98	0.13	0.19	0.23
28	-	29	0.88	0.08	1.95	0.74	0.63	0.38	0.42	0.15	2.38	0.08	0.26	0.42
29	-	30	1.70		1.84	1.50	0.25	0.36	0.19	0.34	1.07	0.06	0.23	0.89
30	-	31	0.88		0.40	1.27	0.62	0.57	0.49	1.51	1.38	0.08	0.23	0.48
31	-	1	1.05		0.16		0.24		0.27	1.85		0.08		0.66

Site 5004 Stoke Ferry - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.26	0.74	0.48	2.24	0.92	0.80	0.71	0.38	2.12	0.73	0.40	2.45
2	- 3	0.36	1.12	0.56	1.37	0.85	1.06	0.55	0.32	2.34	1.11	0.35	1.92
3	- 4	0.14	1.05	0.55	0.32	0.57	0.65	3.06	0.79	3.33	0.65	0.70	1.54
4	- 5	0.19	0.84	0.35	0.27	0.99	0.37	1.56	0.63	1.51	0.63	0.61	0.72
5	- 6	0.41	0.66	0.36	0.27	0.94	1.15	1.27	0.77	1.54	1.46	0.35	0.42
6	- 7	0.56	0.76	0.38	0.51	0.72	2.13	0.68	0.92	2.62	1.69	0.47	0.50
7	- 8	0.16	0.41	0.36	1.25	0.71	0.68	0.58	0.78	0.61	0.47	0.46	0.87
8	- 9	0.43	0.70	0.42	1.48	1.50	0.69	1.37	0.72	0.43	0.38	0.62	1.07
9	- 10	1.00	1.12	0.43	0.86	1.89	0.46	1.05	0.42	0.36	0.93	0.44	0.85
10	- 11	0.84	1.34	0.49	0.58	0.78	0.36	0.79	1.05	0.34	0.53	0.44	1.18
11	- 12	1.13	1.48	0.34	0.36	1.53	0.32	0.50	1.90	0.40	0.39	0.40	0.63
12	- 13	1.36	1.75	0.58	0.40	1.83	0.79	0.47	0.53	0.27	0.44	0.43	0.50
13	- 14	0.91	2.43	0.82	0.47	3.17	0.58	0.35	0.90	0.33	0.64	0.29	0.36
14	- 15	0.37	1.44	1.50	0.61	1.43	0.87	0.58	0.63	0.39	0.67	0.48	0.89
15	- 16	0.11	1.25	0.99	0.64	1.12	1.45	0.68	0.52	0.39	0.33	0.51	0.62
16	- 17	0.44	0.49	1.21	0.68	0.50	1.64	0.85	0.67	0.39	0.54	0.41	0.59
17	- 18	0.43	0.65	1.14	0.94	0.55	0.65	0.55	0.64	0.68	0.22	0.90	1.59
18	- 19	0.36	1.83	0.91	1.53	0.75	0.86	0.99	0.61	0.72	0.24	1.01	0.64
19	- 20	0.38	1.60	1.59	1.25	2.46	0.96	1.05	1.14	0.92	0.37	1.60	0.52
20	- 21	0.55	2.33	0.63	0.54	3.61	1.18	0.57	0.50	1.32	0.43	1.45	0.50
21	- 22	0.84	0.61	0.58	0.78	0.62	1.14	0.39	0.44	3.03	0.48	1.02	0.55
22	- 23	2.20	0.58	1.39	1.29	1.18	0.60	0.68	0.45	2.50	0.85	-	0.87
23	- 24	1.11	0.79	1.67	0.74	2.35	0.64	0.62	0.42	2.42	0.37	-	0.64
24	- 25	0.35	1.29	1.47	0.67	1.72	0.61	0.46	0.34	2.94	0.26	0.91	0.43
25	- 26	0.39	2.06	1.56	0.45	1.07	0.49	0.63	0.47	2.09	0.25	2.48	0.45
26	- 27	0.67	1.26	1.01	0.35	0.69	0.49	0.64	0.53	2.28	0.26	0.66	0.38
27	- 28	1.80	0.34	1.09	0.56	0.73	0.39	1.07	0.46	1.44	0.33	0.84	0.41
28	- 29	3.61	0.47	1.87	0.73	1.68	0.47	0.83	1.02	2.87	0.29	0.74	0.31
29	- 30	0.88		2.58	1.14	1.24	0.59	0.49	1.01	2.27	0.28	0.60	0.73
30	- 31	1.77		1.25	1.07	2.11	0.97	0.50	0.45	1.51	0.30	1.12	1.20
31	- 1	0.33		1.70		1.16		0.99	1.05		0.52		0.89

Site 5006 Lough Navar - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.21	0.55	0.14	2.46	1.51	1.39	0.66	0.19	0.26	0.99	0.16	0.22
2	- 3	0.15	0.23	0.16	1.17	0.21	1.01	0.49	0.31	0.11	0.93	0.18	0.27
3	- 4	0.13	0.23	0.14	0.42	0.27	0.41	0.32	0.20	0.26	1.19	0.15	0.11
4	- 5	0.05	0.26	0.09	0.85	0.36	0.86	0.19	0.37	1.03	0.45	0.12	0.08
5	- 6	-	0.23	0.16	0.21	0.21	2.05	0.14	0.19	0.45	0.45	0.15	0.08
6	- 7	-	0.25	0.24	0.42	0.13	0.60	0.21	0.05	0.38	0.52	0.24	0.63
7	- 8	-	0.23	0.17	0.86	0.15	0.44	0.27	-	0.13	0.56	-	0.69
8	- 9	-	0.27	0.53	0.19	0.50	0.32	0.19	-	0.19	0.74	0.30	0.32
9	- 10	-	0.13	-	0.12	0.30	0.20	0.25	-	0.15	0.16	0.36	0.23
10	- 11	-	0.50	0.18	0.17	0.27	0.13	0.24	0.37	0.08	0.10	0.24	0.17
11	- 12	-	0.44	0.12	0.14	1.54	0.17	0.27	0.46	0.12	0.28	0.19	0.13
12	- 13	0.25	0.45	0.36	0.12	3.35	0.28	0.13	0.20	0.11	0.23	0.14	0.27
13	- 14	0.15	1.90	0.20	0.12	4.33	0.52	0.22	0.19	0.09	0.08	0.20	-
14	- 15	0.17	1.73	0.26	0.17	0.87	0.48	0.19	0.19	0.13	0.13	0.03	0.15
15	- 16	0.11	0.03	0.42	0.21	0.59	0.21	0.23	0.25	0.12	0.14	0.10	0.19
16	- 17	0.13	0.11	0.27	0.33	0.51	0.21	0.20	0.13	0.13	0.10	0.43	0.52
17	- 18	0.29	0.25	0.38	0.19	0.48	0.43	0.20	0.14	0.43	0.13	0.73	0.27
18	- 19	0.18	1.27	0.72	0.31	0.61	0.35	0.25	0.29	0.22	0.12	-	0.11
19	- 20	0.21	0.68	0.30	0.27	0.93	1.38	0.39	0.22	0.70	0.14	0.80	0.08
20	- 21	0.29	0.45	0.13	0.36	1.49	0.95	0.40	0.10	1.00	0.19	0.25	-0.02
21	- 22	0.69	0.15	0.89	0.45	0.27	0.28	0.15	0.22	1.99	0.64	0.08	0.29
22	- 23	0.44	0.16	2.39	0.36	1.35	0.27	0.20	0.06	3.69	0.32	-	0.25
23	- 24	0.93	0.32	1.49	0.23	0.73	0.25	0.17	0.15	2.74	0.14	0.16	0.14
24	- 25	0.22	0.19	0.30	0.19	0.33	0.23	0.39	0.09	3.82	0.16	0.21	0.19
25	- 26	0.46	0.31	0.14	0.19	0.23	0.24	0.27	0.17	2.65	0.11	0.29	0.10
26	- 27	1.08	0.25	0.38	0.13	0.31	0.14	-	0.16	3.46	0.18	0.60	-
27	- 28	2.97	0.16	0.78	0.26	0.27	0.24	0.16	0.15	2.04	0.16	0.14	-
28	- 29	3.35	0.13	0.52	0.32	0.66	0.22	0.25	0.48	0.53	0.16	0.15	-
29	- 30	1.94		1.20	0.25	1.27	0.23	0.23	1.18	0.93	0.09	0.24	-
30	- 31	1.46		0.19	1.98	1.76	0.39	0.62	1.75	1.95	0.13	0.23	0.19
31	- 1	1.02		0.59		1.80		0.29	1.48		0.15		0.25

Site 5007 Barcombe Mills - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.44	1.23	0.33	1.96	1.76	1.03	1.12	0.74	1.39	0.97	0.47	2.64
2	- 3	0.45	1.36	0.63	0.67	1.17	1.05	1.04	0.88	0.94	1.37	0.42	4.30
3	- 4	0.28	1.11	1.54	0.40	0.82	0.99	2.51	0.92	2.31	0.83	0.54	2.89
4	- 5	0.31	1.01	0.56	0.49	1.45	1.74	1.51	0.66	0.69	0.93	0.66	0.79
5	- 6	0.37	1.21	0.53	0.45	1.11	2.84	1.34	0.43	0.59	1.29	0.23	0.93
6	- 7	0.49	1.00	0.73	0.42	0.96	2.61	1.08	0.67	0.74	1.99	0.34	0.87
7	- 8	0.28	0.39	0.79	-	0.71	0.94	1.30	0.84	0.52	0.58	0.64	1.20
8	- 9	0.63	0.90	0.37	-	1.59	0.93	0.95	0.81	0.56	0.47	0.81	0.81
9	- 10	0.78	1.46	-	-	2.03	0.83	0.70	1.18	0.65	0.67	0.61	0.62
10	- 11	0.95	1.40	-	-	2.35	0.59	0.89	1.97	0.38	0.35	0.37	0.70
11	- 12	1.00	2.12	-	-	2.78	0.53	0.60	1.71	0.30	0.32	0.55	0.79
12	- 13	1.25	2.32	-	-	-	0.57	0.47	0.46	0.28	0.35	0.53	0.43
13	- 14	0.70	2.14	-	-	-	0.57	0.54	0.57	0.46	0.44	0.30	0.69
14	- 15	0.34	2.22	-	0.52	2.97	0.94	-	0.74	0.33	0.37	0.50	1.92
15	- 16	0.42	1.39	-	-	2.05	2.00	-	0.68	0.52	0.44	0.70	0.60
16	- 17	0.41	0.63	-	-	0.90	1.28	0.52	0.54	0.40	0.77	0.64	0.93
17	- 18	0.51	0.98	1.00	-	0.94	0.78	0.43	0.58	0.49	0.42	0.72	1.44
18	- 19	0.44	2.07	1.10	-	1.45	1.42	0.41	0.91	1.01	0.39	0.78	0.48
19	- 20	0.54	2.18	0.93	-	1.02	1.26	0.98	1.36	1.49	0.37	0.85	0.42
20	- 21	0.65	2.49	1.42	-	-	1.14	0.65	0.44	2.36	0.52	1.28	0.59
21	- 22	0.80	0.54	0.62	-	-	1.32	0.48	0.16	2.34	0.60	0.93	0.62
22	- 23	2.02	0.77	0.83	1.41	1.90	0.80	-	0.50	2.36	-	1.23	0.76
23	- 24	1.90	0.99	1.60	0.83	2.96	1.53	-	0.49	1.84	0.40	1.81	0.54
24	- 25	0.54	1.59	1.42	0.99	1.87	0.70	0.52	0.71	1.93	0.32	1.31	0.39
25	- 26	1.68	2.31	1.35	0.61	1.05	0.67	1.03	0.78	1.72	0.31	1.66	0.43
26	- 27	0.78	2.08	1.19	0.61	1.00	0.52	1.18	0.76	0.76	0.30	0.97	0.58
27	- 28	0.86	0.43	1.26	0.52	1.72	0.72	1.03	0.66	1.13	0.44	0.99	0.42
28	- 29	2.33	0.47	1.69	0.55	1.46	0.61	0.73	0.83	2.62	0.27	0.51	0.30
29	- 30	1.85		2.01	1.21	0.80	0.58	0.54	1.43	2.17	0.24	0.74	0.97
30	- 31	0.85		1.01	1.39	1.53	0.85	0.52	1.26	0.61	0.33	2.07	1.05
31	- 1	1.45		0.88		0.71		0.71	2.15		0.42		0.53

Site 5008 Yarner Wood - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.29	1.11	0.16	0.45	1.93	0.71	1.40	0.72	0.43	0.83	-	2.51
2	- 3	0.25	0.66	0.35	0.29	0.89	0.63	2.48	1.00	0.23	1.13	0.25	-
3	- 4	0.20	0.77	-	0.23	1.22	0.55	2.09	0.18	0.34	0.57	0.43	-
4	- 5	0.20	0.32	0.17	0.22	0.71	0.73	0.69	0.37	0.27	0.71	0.23	0.24
5	- 6	-	0.28	0.16	0.19	0.11	1.54	0.42	0.21	0.34	0.98	0.13	0.18
6	- 7	-	0.45	0.22	0.48	0.45	-0.05	0.53	0.43	0.89	1.20	0.15	0.34
7	- 8	0.16	0.17	0.30	-	0.63	0.42	0.94	0.54	0.29	0.78	0.43	0.45
8	- 9	0.52	0.42	0.36	1.00	1.02	0.46	0.60	0.44	0.46	1.02	0.30	0.20
9	- 10	0.70	-	0.41	-	1.20	0.38	0.58	1.25	0.28	0.62	0.39	0.28
10	- 11	0.93	-	0.40	0.51	0.96	0.28	0.45	1.70	0.21	0.18	0.21	0.30
11	- 12	0.70	1.48	-	0.26	1.61	0.35	0.35	0.35	0.22	0.34	0.24	0.22
12	- 13	1.13	1.66	0.49	0.21	3.45	0.32	0.30	0.33	0.22	0.29	0.03	0.20
13	- 14	0.40	1.48	0.51	0.18	4.23	0.29	0.49	0.43	0.25	0.14	0.14	0.37
14	- 15	0.19	1.08	0.63	-	4.53	0.82	0.42	0.52	-	0.26	0.22	0.61
15	- 16	0.21	0.87	1.19	0.38	4.72	0.60	0.33	0.36	0.19	0.21	0.21	0.15
16	- 17	0.21	0.57	1.02	0.46	1.81	0.64	0.34	0.32	0.51	0.18	0.17	1.31
17	- 18	0.17	0.49	0.47	0.55	0.30	0.50	0.41	0.46	0.51	0.16	0.34	0.90
18	- 19	0.21	1.39	0.71	0.41	0.91	1.00	0.59	0.66	0.63	0.19	0.37	0.15
19	- 20	0.48	0.69	-	0.30	1.55	1.02	0.80	0.52	1.16	0.13	0.29	0.22
20	- 21	0.33	1.14	0.99	-	2.51	1.95	0.74	0.24	3.08	0.34	0.03	0.24
21	- 22	0.34	0.15	2.15	-	1.43	0.78	0.48	0.19	1.87	0.42	0.46	0.28
22	- 23	1.19	0.21	1.03	0.91	1.26	-0.05	0.63	0.39	-	0.46	0.37	0.34
23	- 24	1.59	0.32	1.61	0.40	1.16	0.87	0.50	0.07	0.29	0.20	0.56	0.09
24	- 25	0.49	0.55	0.79	0.51	0.88	0.39	0.51	0.47	2.09	0.26	0.28	0.18
25	- 26	0.57	1.30	0.32	0.41	0.82	0.31	0.49	0.34	1.59	0.16	0.26	0.33
26	- 27	0.85	0.84	0.25	0.35	0.72	0.25	0.59	1.42	0.70	0.22	0.60	0.32
27	- 28	0.87	0.22	1.06	0.20	0.90	0.46	0.40	-	2.32	0.14	-	0.13
28	- 29	2.03	0.18	1.24	0.25	1.01	0.40	0.69	0.55	0.04	0.20	0.14	0.11
29	- 30	1.95		-	0.20	0.69	0.29	0.27	0.89	1.06	-	0.30	0.76
30	- 31	0.89		0.45	1.59	1.03	0.61	0.50	2.22	-	0.22	0.66	0.21
31	- 1	1.77		0.49		0.79		0.52	1.92		0.12		0.32

Site 5009 High Muffles - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.39	0.76	0.36	0.32	1.03	0.59	0.54	0.22	1.60	1.21	0.09	1.08
2	- 3	0.38	0.65	0.51	0.28	0.62	0.23	0.91	0.95	1.87	0.42	0.31	0.82
3	- 4	0.22	0.92	0.42	0.55	0.51	0.35	1.07	0.32	1.18	0.37	0.25	0.32
4	- 5	0.29	0.50	0.29	0.75	0.38	0.79	0.27	0.37	3.14	0.44	0.23	0.26
5	- 6	0.37	0.67	0.21	0.69	0.38	0.56	0.45	0.47	2.50	0.33	0.17	0.46
6	- 7	0.50	0.67	0.29	0.92	0.55	1.48	0.34	0.33	3.06	0.54	0.04	0.30
7	- 8	0.40	0.38	0.38	0.82	0.79	0.61	0.36	0.32	1.20	0.57	0.48	0.57
8	- 9	0.40	0.73	0.07	0.55	1.27	0.62	0.53	0.41	0.78	0.48	0.44	0.39
9	- 10	0.71	0.97	0.73	0.26	1.13	0.46	0.44	0.47	0.69	0.65	0.24	0.49
10	- 11	1.12	0.96	0.60	0.19	0.30	0.40	0.60	0.65	0.31	0.28	0.17	0.50
11	- 12	1.12	0.72	0.39	0.43	0.87	0.32	0.40	1.62	0.27	0.21	0.46	0.39
12	- 13	1.41	0.78	0.55	0.42	0.30	0.52	0.34	0.26	0.22	0.20	0.51	0.37
13	- 14	1.35	1.17	0.49	0.33	2.08	0.62	0.19	0.55	0.32	0.47	0.17	0.32
14	- 15	0.40	1.54	0.53	0.43	1.00	0.72	0.26	0.71	0.19	0.21	0.35	0.42
15	- 16	0.37	0.82	0.56	0.86	0.78	0.74	0.31	0.36	0.23	0.22	0.35	0.31
16	- 17	0.29	0.29	0.65	0.50	0.53	0.70	-0.05	0.49	0.18	0.35	0.32	0.74
17	- 18	0.49	0.30	0.42	0.76	0.46	0.88	0.48	0.38	0.40	0.23	1.05	1.43
18	- 19	0.41	1.70	0.68	1.44	1.32	0.96	0.27	0.47	0.62	0.37	0.69	0.33
19	- 20	0.28	1.63	0.57	1.68	2.07	1.39	0.75	1.00	1.01	0.18	0.21	0.23
20	- 21	0.39	1.68	0.60	0.71	1.44	1.49	1.08	0.49	1.42	0.43	1.32	0.33
21	- 22	0.93	0.50	0.44	0.96	0.37	0.78	0.46	0.21	2.57	0.40	0.82	0.44
22	- 23	0.40	0.38	1.65	1.22	1.19	0.57	0.85	0.32	2.15	0.47	0.54	0.54
23	- 24	0.41	0.41	1.94	1.02	1.69	0.80	0.35	0.57	2.54	0.14	0.90	0.57
24	- 25	1.49	0.56	2.10	0.75	0.85	1.12	0.25	0.36	3.87	0.16	0.43	0.64
25	- 26	1.39	0.92	0.92	0.72	0.38	0.53	0.46	0.52	3.03	1.14	0.50	0.26
26	- 27	0.32	0.47	0.54	0.75	0.38	0.60	0.70	0.35	1.96	0.16	0.27	-
27	- 28	1.62	0.24	1.10	1.13	0.61	0.36	0.47	0.43	1.64	0.12	0.49	-
28	- 29	1.02	0.19	2.20	0.94	0.73	0.36	0.56	1.03	2.03	0.09	0.27	0.27
29	- 30	1.06		2.28	1.30	1.18	0.33	0.30	0.59	2.31	0.07	0.31	0.56
30	- 31	0.78		1.00	1.08	2.22	0.49	0.63	0.83	1.58	0.09	0.40	0.45
31	- 1	0.30		0.38		2.58		0.32	1.19		0.19		0.64

Site 5010 Strathvaich Dam - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date													
1	- 2	0.12	0.24	0.27	0.23	1.61	0.30	-	-0.04	0.27	0.25	0.21	-
2	- 3	0.08	0.34	0.16	0.44	0.23	0.24	0.43	0.15	0.79	0.46	0.21	-
3	- 4	-0.06	0.12	0.23	0.17	0.22	0.12	0.18	-0.04	0.70	0.52	0.23	-
4	- 5	0.08	0.19	0.17	0.34	0.19	0.21	0.16	-0.04	0.34	0.32	0.20	-
5	- 6	0.07	0.13	0.19	0.52	0.14	1.14	0.18	0.11	1.90	0.36	0.19	-
6	- 7	0.15	0.14	0.15	1.00	0.13	0.41	0.17	0.16	3.01	0.39	0.23	-
7	- 8	0.14	0.11	0.30	0.24	0.11	0.11	0.21	0.12	1.53	0.35	0.49	-
8	- 9	0.17	0.09	0.32	0.19	0.15	0.14	0.09	0.08	0.10	0.40	-0.04	-
9	- 10	-0.06	0.30	0.49	0.17	0.32	0.14	0.13	0.99	0.10	0.09	0.29	-
10	- 11	0.23	0.12	0.28	0.22	0.17	0.18	0.15	1.58	0.06	0.12	0.29	-
11	- 12	0.40	-0.06	0.33	0.17	0.20	0.16	0.16	0.64	0.08	0.15	0.49	-
12	- 13	0.19	-0.06	0.30	0.17	0.52	0.18	0.19	0.26	0.15	0.13	1.02	-
13	- 14	0.16	0.17	0.24	0.17	1.70	0.36	0.22	0.17	0.12	0.11	0.28	-
14	- 15	-0.06	0.19	0.23	0.34	1.38	0.29	0.22	0.14	0.05	0.10	0.28	-
15	- 16	-0.06	0.53	0.13	0.26	0.76	0.67	0.19	-0.05	0.08	0.05	0.22	0.23
16	- 17	0.12	0.18	0.17	0.38	0.76	0.31	0.27	-0.05	0.07	0.05	0.21	0.45
17	- 18	0.09	0.11	0.40	0.38	1.07	0.21	0.14	0.18	0.15	0.15	0.25	0.23
18	- 19	0.10	0.75	0.32	0.39	0.52	1.09	0.32	0.27	0.25	0.07	0.26	0.20
19	- 20	0.21	0.37	0.28	1.82	0.33	1.24	0.25	0.09	0.32	0.09	0.76	0.21
20	- 21	0.19	0.35	0.27	1.69	0.17	0.27	0.40	0.09	0.63	0.09	0.36	0.20
21	- 22	0.24	0.18	0.23	1.06	0.24	-	0.25	0.10	0.44	0.30	0.20	0.30
22	- 23	0.10	0.24	2.39	0.59	0.63	-	0.19	0.15	0.67	0.11	0.25	0.29
23	- 24	0.28	0.13	0.53	0.19	0.26	-	0.17	0.15	0.94	0.11	0.29	0.21
24	- 25	0.29	0.32	0.30	0.26	0.22	0.14	0.15	0.11	2.40	0.08	0.30	0.22
25	- 26	0.32	0.19	0.18	0.14	0.23	0.30	0.27	0.15	1.62	0.09	0.20	0.21
26	- 27	0.80	0.23	0.22	0.21	0.26	0.20	0.21	-0.04	2.01	0.10	0.28	0.21
27	- 28	1.01	0.20	0.63	0.22	0.38	0.20	0.18	0.12	1.88	0.12	0.23	0.24
28	- 29	0.33	0.15	0.22	0.74	0.49	0.58	-0.04	0.06	1.10	0.25	0.29	0.23
29	- 30	0.21		0.66	1.51	0.52	0.35	0.23	0.17	0.83	0.24	-	0.63
30	- 31	-0.06		0.26	1.90	0.54	-	0.16	0.93	0.82	0.25	-	0.39
31	- 1	0.12		0.11		0.30		0.08	1.88		0.23		0.77

Site 5011 Glen Dye - particulate sulfate as S (SO_4-S)
Concentration in air ($\mu g/m^3$)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Date												
1 - 2	0.37	0.19	0.17	0.23	-	0.26	0.25	0.83	0.91	0.47	0.10	0.09
2 - 3	0.51	0.29	0.13	0.46	0.23	0.28	0.51	0.37	1.18	0.44	0.06	0.13
3 - 4	0.08	0.10	0.11	0.14	0.21	0.20	0.19	0.09	0.60	0.28	0.17	0.14
4 - 5	0.08	0.15	0.07	0.28	0.18	0.50	0.12	0.12	1.48	0.32	0.08	0.09
5 - 6	0.07	0.25	0.06	0.31	0.09	0.78	0.15	0.17	3.04	0.38	0.12	0.08
6 - 7	0.33	0.34	0.08	0.97	0.12	0.36	0.15	0.10	2.60	0.38	0.29	0.05
7 - 8	0.55	0.15	0.17	0.49	0.11	0.40	0.17	0.17	1.64	0.46	0.85	0.96
8 - 9	0.39	0.47	0.25	0.16	0.82	0.15	0.08	0.26	0.35	0.46	0.71	0.48
9 - 10	0.71	0.20	1.09	-0.03	1.43	0.31	0.19	1.22	0.33	0.11	0.21	0.78
10 - 11	0.83	0.38	0.43	0.17	0.19	0.17	0.10	1.96	0.07	0.08	0.58	0.57
11 - 12	0.54	0.05	0.15	0.14	0.19	0.14	0.07	1.53	0.06	0.10	0.86	0.43
12 - 13	0.54	0.15	0.08	0.20	0.25	0.13	0.14	0.23	0.15	0.13	0.17	0.13
13 - 14	0.11	0.81	0.17	0.16	1.83	0.82	0.18	0.12	0.12	0.14	0.23	0.30
14 - 15	0.07	0.55	0.08	0.13	1.32	0.70	0.20	0.09	0.07	0.06	0.09	0.32
15 - 16	0.15	1.09	0.09	0.25	-	0.72	0.28	0.10	0.06	0.05	0.09	-
16 - 17	0.09	0.18	0.09	0.46	1.34	0.39	0.39	0.08	0.08	0.09	-0.03	-
17 - 18	0.10	0.08	0.23	0.47	1.49	0.20	0.13	0.11	0.21	0.12	0.23	-
18 - 19	0.12	0.91	0.21	0.79	1.41	0.58	0.43	0.21	0.16	0.06	0.19	0.14
19 - 20	0.16	1.10	0.24	2.09	0.45	1.11	0.69	0.18	0.56	0.08	0.45	0.13
20 - 21	0.27	1.18	0.36	1.91	0.16	1.39	0.61	0.09	0.62	0.20	0.83	0.26
21 - 22	0.96	0.13	0.44	1.81	0.28	0.59	0.39	0.10	1.67	0.37	0.51	-
22 - 23	0.64	0.07	0.42	1.39	-	0.33	0.24	0.14	3.43	0.14	0.07	0.48
23 - 24	0.24	0.04	2.65	0.63	0.30	0.43	0.18	0.22	2.25	0.18	0.59	0.15
24 - 25	0.34	0.15	0.20	0.52	0.21	0.36	0.11	0.11	2.22	0.15	0.21	0.20
25 - 26	0.46	0.42	0.88	0.51	0.19	0.63	0.54	0.14	2.16	0.07	0.42	0.06
26 - 27	0.38	0.10	0.16	0.46	0.31	0.47	0.39	0.12	1.69	0.12	0.14	0.16
27 - 28	0.75	0.06	1.00	0.17	0.37	0.42	0.28	0.11	2.57	0.04	0.39	0.10
28 - 29	0.36	0.07	1.92	1.75	0.60	0.34	0.16	0.19	2.41	0.06	0.10	0.23
29 - 30	0.18		1.21	2.48	0.52	0.30	0.26	0.42	1.40	0.05	0.12	0.97
30 - 31	0.11		0.54	1.40	0.55	0.36	0.52	0.90	1.04	0.08	0.03	0.67
31 - 1	0.43		0.10		0.38		0.32	1.47		0.08		1.20