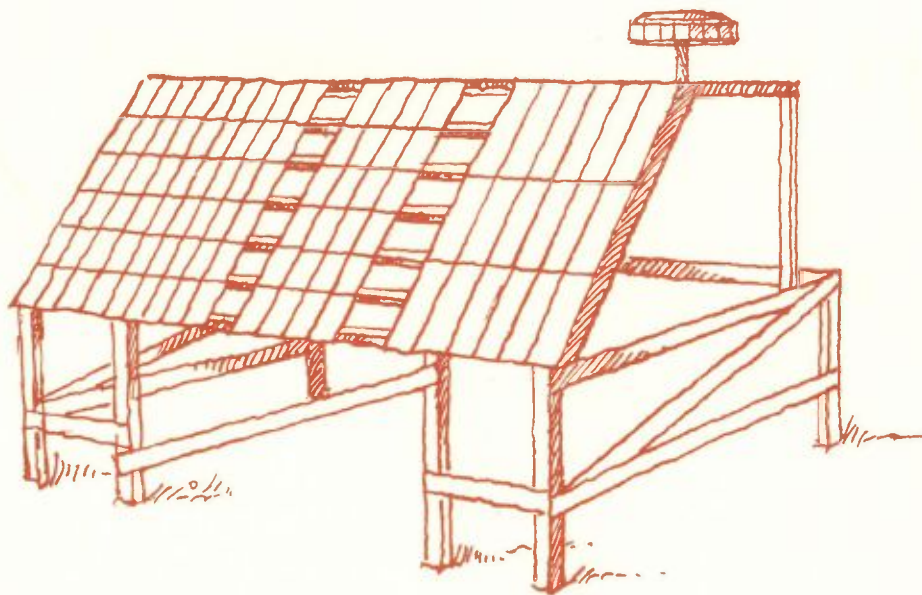


CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

UN/ECE INTERNATIONAL CO-OPERATIVE PROGRAMME
ON EFFECTS ON MATERIALS, INCLUDING HISTORIC
AND CULTURAL MONUMENTS



Report No. 16:
ENVIRONMENTAL DATA REPORT
SEPTEMBER 1991 TO AUGUST 1992

DECEMBER 1993

PREPARED BY THE ENVIRONMENTAL SUB-CENTRE



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International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments

**Environmental data report
September 1991 to August 1992**

Jan F. Henriksen, Kari Arnesen and Arild Rode

Prepared by the Environmental Sub-Centre
Norwegian Institute for Air Research
P.O. Box 64, N-2001 Lillestrøm, Norway

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International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments

Environmental data report September 1991 to August 1992

1. Introduction

Airborne acidifying pollutants are known to be one major cause of corrosion of different materials including the extensive damage that has been observed on historic and cultural monuments. In order to fill some important gaps of knowledge in this field the Executive Body for the Convention on Long-range Transboundary Air Pollution decided to launch an international co-operative programme. The programme started in September 1987 and involves exposure at 39 test sites in 12 European countries and in the United States and Canada.

The aim of the programme is to perform a quantitative evaluation of the effect of sulphur pollutants in combination with NO_x and other pollutants as well as climatic parameters on the atmospheric corrosion of important materials. For this purpose measurements of gaseous pollutants, precipitation and climate parameters have been initiated at or nearby each test site, together with evaluation of corrosion of the exposed test materials at each site.

A Task Force is organizing the programme with Sweden as lead country and the Swedish Corrosion Institute serving as the Main Research Centre. Sub-centres in different countries have been appointed, each responsible for their own materials group. The materials groups are:

Structural metals, including steel, weathering steel, zinc and aluminium (Sub-centre responsible for evaluation: National Research Institute for Protection of Materials, Prague, Czechoslovakia), copper and cast bronze (Bayerisches Landesamt für Denkmalpflege, Munich, Germany).

Stone materials, including Portland limestone and White Mansfield dolomitic sandstone (Building Research Establishment, Department of Environment, Watford, United Kingdom).

Paint coatings, including coil coated steel with alkyd melamine, steel with silicon alkyd paint, wood with alkyd paint system and wood with primer and acrylate (Norwegian Institute for Air Research, Lillestrøm, Norway).

Electric contact materials, including nickel, copper, silver and tin as coupons; Eurocard connectors of different performance classes (Swedish Corrosion Institute and Royal Institute of Technology, Stockholm, Sweden).

Environmental data storing, reporting and evaluation are the responsibility of the Norwegian Institute for Air Research. The aim of this report is to present all environmental data available from the fifth year of exposure, September 1991 to August 1992.

The yearly values for all test-sites for all four years are included in this report. To illustrate the quality of the data reported a statistical treatment of some of the environmental data was performed in the environmental report no. 9 (Henriksen et al., 1992). In this report some of the most important conclusions drawn, are summarized in chapter 8.

2. The measuring programme

The measuring programme includes a normal programme and an extended programme.

The measuring programme.

Components to be measured		
Normal programme	Gas Precipitation Climate	SO ₂ , NO ₂ mm, pH, SO ₄ -S, NO ₃ -N, Cl ⁻ , conductivity Temperature, relative humidity, time of wetness (TOW) and sunshine hours
Extended programme	Gas Precipitation	O ₃ NH ₄ -N, Na, Ca, Mg, K

The data are to be reported to the environmental sub-centre as daily, weekly or monthly mean values, except for TOW, sunshine hours and mm precipitation which are reported as the sums. The data will be presented as monthly and yearly values.

3. Data from the monitoring test sites

The data are sent to the environmental sub-centre on special reporting forms. Some sites have given the results in ASCII files on diskette.

All data presented by the environmental sub-centre, as in this report, are given with the same accuracy as in the filled-in reporting forms. For data series which include values "below the detection limit", these are, by convention, replaced with one half of the reported detection limits when calculating the mean values.

The monthly mean values are calculated from the daily or weekly values or used directly if monthly values are the only reported. Information about the data sets used for calculation of the mean values reported in this report is given by letter code

D = daily records
 W = weekly records
 M = monthly records.

Information about the original measuring system for each test site is given the report "Description of test sites".

4. Monthly mean concentrations

The monthly and yearly values are given in the tables in Annex A. The data have been subject to the following restrictions and classifications:

4.1. Gases, temperatures and relative humidity

- For monthly mean values calculated from daily measurements, the percentage of data used in the calculations is listed together with mean values.
- A monthly mean value with more than 75% data for a given component is accepted without any remarks.
- A monthly mean value for a component with between 50% and 75% of available data has been marked with an asterisk.
- A monthly mean value with less than 50% data is reported with an (X). Monthly values with less than 50% of the data included in the calculations are not recommended used for statistical dose-response treatment.

4.2. Precipitation components

- For monthly mean values calculated from daily or weekly rain results, the percentages of the total amount of rain used in the calculations are listed together with the mean values.
- A monthly mean value for a component with more than 75% of the amount of rain used in the calculations is accepted without any remarks.
- A monthly mean value for a component with between 50% and 75% of the amount of rain used in the calculations has been marked with an asterisk.
- A monthly mean value with less than 50% of the amount of rain used in the calculations is reported with an (X). Monthly values with less than 50% of the total rain included in the calculations are not recommended used for further data treatment.

4.3. TOW and sunshine hours

The total sum from the recorded days is adjusted to a complete month by dividing the sum with the numbers of records and multiply with the number of days in the month. The percentage of data used for these adjustment is listed together with the monthly value.

-
- With more than 75% of the values reported, the monthly value will be reported without any remarks.
 - With between 50% and 75% of the values reported, the monthly value will be reported with an asterisk.

- With less than 50% of the values reported, a monthly value is reported with an (X). For further data treatment these data are often replaced by estimated values, see chapter 5.

5. Yearly mean concentrations

5.1. Yearly mean values

All values given for yearly mean values are treated in the same way as the monthly values. If daily results are reported during the whole year, all available daily values are used for the calculation of the mean value. The percentage of available data is also calculated and listed together with the yearly values.

- A yearly mean value for observations including 75% of the monthly values is accepted without any remarks. A yearly mean value including between 50% and 75% of the monthly values is accepted with an asterisk.
- A yearly mean value including less than 50% is reported with an (X).

If weekly or monthly values are reported, the monthly values are used in the calculations and the percentage is not listed.

5.2. TOW, sunshine hours and amount of precipitation

TOW, sunshine hours and amount of precipitation are reported as the total sum and must be completed to a full year if the results shall be of any use. Since there are seasonal variations in the climatic factors the use of average values for adjusting the results can be incorrect. To complete the yearly results estimated values were used. The estimated values were formed by comparing similar sites, by looking at reported values for other months from the same season or from meteorologic statistics. Only 4 estimated values are accepted for each parameter, and the estimated values are marked with a plus (+). If monthly values are available from the previous years, the missing monthly value is substituted with the mean value from the same month for the available years and marked with a (+).

If more than 4 of the monthly values are missing no yearly value is reported.

6. Calculations of monthly values

Mean temperature (TM)

$$T_M = \frac{\sum_0^i T_i}{i}$$

T_i = measured values

i = number of records

Mean relative humidity (RH_M)

$$RH_M = \frac{\sum_0^i RH_i}{i}$$

Time of wetness (TOW) (for incomplete data sets
see chapter 4.3 and 5.2)

$$TOW = \sum_0^i TOW_i$$

Sunshine hours (sh) (for incomplete data sets
see chapter 4.3 and 5.2)

$$sh = \sum_0^i sh_i$$

Sunshine hours shall report the number of hours where the test panels have been exposed to sunlight. So far no efforts have been made to transform different sun radiation measurements to sunshine hours.

Mean gas concentrations GM

$$G_M = \frac{\sum_0^i G_i}{i}$$

For some sites where complete information of the sampling period exists, another equation is used

$$G_M = \frac{\sum_0^i (n_i \cdot G_i)}{\sum_0^i n_i}$$

$n_i = \text{sampling period}$

Precipitation (for incomplete data sets
see chapter 4.3 and 5.2)

$$mm = \sum_0^i mm_i$$

weighted mean pH (pH_M)

$$pH_M = -\log \frac{\sum_0^i [mm_i \cdot (10^{-pH_i})]}{\sum_0^i mm_i}$$

weighted mean values for cations, anions and conductivity (C_M)

$$C_M = \frac{\sum_0^i (mm_i \cdot C_i)}{\sum_0^i mm_i}$$

7. Results and discussions

A list with site numbers, names and description of locations is given in Table 1. The yearly results for the first, second, third, fourth and fifth year, are given in Table 2 and the monthly and yearly results from September 1991 to August 1992 in Annex A. The regularity of the environmental data is comparable to the previous two years. However, still there are sites where the influx of data is slower and lower than expected.

For calculating dose-response equation it is crucial to have complete data sets and sufficient spread in the values for the most important parameters. If gaps in the data occur, estimated values must sometimes be generated. To illustrate the quality of the data measured and their yearly fluctuation, scatter plots of the most important parameters are made.

The pattern of the fifth year results is similar to them of the previous years. In Figures 1-4 scatter plots of NO₂, SO₂, TOW and pH for the fourth versus the fifth year results are presented. The figures show that the environmental condition at the sites do not change too much from one year to the next.

The NO₂ results in Figure 1 were clustered around a y=x line, corresponding to a 1:1 ratio. However, it seems that several test sites have a little lower mean value the fifth year. Only in Lisbon we have had a substantial increase in the NO₂ results. We got no values from Rome this year. Since Rome normally has the second highest values of NO₂ in the database, the good spread in the NO₂ values among the test sites is to some degree reduced this year.

The SO₂ results in Figure 2 show that many of the test sites have lower SO₂ concentration the fifth year. The only site with substantial increased SO₂ concentrations is Lisbon. The reduction in the SO₂ concentrations during the project period is even more distinct when the five year means are compared with the first year values (Figure 5).

The TOW results in Figure 3 were clustered around the 1:1 ratio. The largest deviation was observed at the German test sites 9, 10 and 11 (Langenfeld, Bottrop and Essen) which had a substantial increase of the time of wetness, while site 30 (Stoke Orchard) was dry for more of the time during the fifth year. The TOW parameter is the parameter where most data are missing. For the fifth year the yearly results from 16 test sites are missing.

For pH a majority of the results have slightly higher values the fifth year. The largest decrease of pH values is observed in Kasperske Hory (pH 4,21 to pH 3,60). Substantial increase of the pH was observed in Aschaffenburg (pH 4,94 to pH 5,79) and Stoke Orchard (pH 3,18 to pH 4,66).

When the ECE programme started it was important to find test sites with different concentrations of SO₂, NO₂ and H⁺ (pH). The figures show that we still are reasonably successful with the sites selected. The yearly mean concentrations for SO₂ has dropped and the total range goes now from 1 µg/m³ to 60 µg/m³ with the majority of sites reporting values below 30 µg/m³. For NO₂ the distribution is not

as good the fifth year as the previous ones. The yearly mean concentrations are now ranging from 4 to 50 $\mu\text{g}/\text{m}^3$ plus one site (Milan) with still more than 100 $\mu\text{g}/\text{m}^3$. Probably we would have a value between 50 and 100 $\mu\text{g}/\text{m}^3$ if Rome had reported NO_2 values for the fifth year.

The pH was between 3.6 and 6.5 and TOW between 1 500 and 7 000 hours per year. Many of the test sites closer to the Atlantic ocean are more or less affected by marine aerosols contribution. This is particularly the case for the sites in the United Kingdom, Lisbon, two Norwegian sites and the sites in the Netherlands. In addition high chloride concentrations are observed at the Italian and Spanish sites.

The only site which seems to have reduced air quality is the Jeronimo monastery in Lisbon, where particularly the gas pollutants have increased. For most of the other sites the air quality is the same or slightly improved. The highest improvements are observed in Bilbao and Stoke Orchard.

8. Characterization of the air quality data

In report no. 9 Environmental data report September 1989 to August 1990 (Henriksen et al., 1992) an extensive statistical evaluation of the results for gas concentrations was carried out. The main conclusions drawn in this report are still valid and can be summarized as follows:

Mean, median and 90-percentile characteristics of the annual data series for each test site were in most cases in good agreement, however, for some sites where the data have a distribution that is far from symmetry, their differences may be substantial.

Little difference in the distribution of daily concentrations was found between the three yearly series by cumulative frequency plots. Most of the observed differences were due to unequal patterns of missing data. This indicates good quality of the daily reported data.

The three-year and one-year series of gaseous compounds were found to mostly obey log-normal law of distribution, however, the data did not fit either normal or log-normal distribution in more cases than what would be expected by chance. It may therefore be necessary to establish other models. It is reasonable to assume that the deviations from the distribution are to some extent due to seasonal variations, but this hypothesis was not tested.

When calculating annual means of concentrations, the seasonal differences are of most importance; therefore it may be reasonable to construct a rule based on seasonal availability of the data rather than on annual availability. Missing of two months in a season may probably be acceptable. However, as illustrated for O_3 site 17 four months of missing data will give a biased mean value.

When calculating monthly means, the rules for accepting the mean based on amount of available data (see Chapter 4) were found reasonable. However, if we exclude daily data for calculation of annual means for other reasons than

erroneous results, we are losing information. We therefore recommend to use all available daily values for annual mean calculations, even if the daily data reported in a month is below 50%.

9. References

Henriksen, J.F., Arnesen, K. and Rode, A. (1991) Environmental data report, September 1987 to August 1989. Lillestrøm, Norwegian Institute for Air Research (UN/ECE International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments. Report No. 3).

Henriksen, J.F., Bartonova, A., Arnesen, K. and Rode, A. (1992) Environmental data report, September 1989 to August 1990. Lillestrøm, Norwegian Institute for Air Research (UN/ECE International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments. Report No. 9) (NILU OR 7/92).

Henriksen, J.F., Bartonova, A., Arnesen, K. and Rode, A. (1992) Environmental data report, September 1990 to August 1991. Lillestrøm, Norwegian Institute for Air Research (UN/ECE International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments. Report No. 10) (NILU OR 96/92).

The Swedish Corrosion Institute (1989) Description of test sites. Stockholm (UN/ECE International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments. Report No. 2).

Tables and Figures

Table 1: List of test sites and starting dates of exposure programme.

Test site no.	Test site name	Country	Location
1	Prague-Letnany	The Czech Republic	Urban
2	Kasperske Hory	"	Rural
3	Kopisty	"	Industry
4	Espoo	Finland	Urban
5	Ähtäri	"	Rural
6	Helsinki-Vallila	"	Industry
7	Waldhof-Langenbrügge	Federal Republic of Germany	Rural
8	Aschaffenburg	"	Urban
9	Langenfeld-Reusrath	"	Rural
10	Bottrop	"	Industry
11	Essen-Leithe	"	Rural
12	Garmisch-Partenkirchen	"	Rural
13	Rome	Italy	Urban
14	Casaccia	"	Rural
15	Milan	"	Urban
16	Venice	"	Urban
17	Vlaardingen	Netherlands	Industry
18	Eibergen	"	Rural
19	Vredepeel	"	Rural
20	Wijnandsrade	"	Rural
21	Oslo	Norway	Urban
22	Borregaard	"	Industry
23	Birkenes	"	Rural
24	Stockholm South	Sweden	Urban
25	Stockholm Centre	"	Urban
26	Aspvreten	"	Rural
27	Lincoln Cathedral	United Kingdom	Urban
28	Wells Cathedral	"	Urban
29	Clatteringshaws Loch	"	Rural
30	Stoke Orchard	"	Rural, industry
31	Madrid	Spain	Urban
32	Bilbao	"	Industry
33	Toledo	"	Rural
34	Moscow	Russia	Urban
35	Lahemaa	Estonia	Rural
36	Lisbon-Jeronimo Monastery	Portugal	Urban
37	Dorset	Canada	Rural
38	Research Triangle Park	USA (NC)	Rural
39	Steubenville	USA (Oh)	Industry

Table 2: Yearly mean values for all parameters and sites for first, second, third, fourth and fifth year of the programme.

SITE	YEAR	CLIMATE			GASES			PRECIPITATION						PRE-OPTIONS					
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
CH 1	87-88	9.5	79	2830	1865	77.5	42.4		639.3	4.03	3.25		2.16	45.9	.55				.86
CH 1	88-89	9.8	75	3181	1563	74.2	32.6		385.6	4.71	7.86	.65	2.32	121.4	.97				.60
CH 1	89-90	10.3	74	2555	1848	58.1	34.2		380.8	4.66	6.43	1.02	3.93	40.9	1.98				1.12
CH 1	90-91	8.5	75	2940	1593	61.4	34.9		469.5	4.21	4.95	1.95	1.82	58.1					
CH 1	91-92	9.5	71			43.7	21.0			4.39	10.03	3.10	.88	46.4					
CH 2	87-88	7.0	77	3011		19.7	17.9		850.2	3.85	1.48		.77	48.7	.41				.80
CH 2	88-89	7.0	77	3690		14.5	14.2		751.8	4.53	2.99	.94	1.12	22.8	.77				1.76
CH 2	89-90	7.4	76	3405		25.6	8.8		703.4	4.35	1.85	1.42	1.61	26.7	3.50				1.42
CH 2	90-91	5.8	79	2939		18.4	9.4		832.1	4.21	4.84	1.78	.60	38.3					
CH 2	91-92	6.7	73			12.3	8.2			3.60	4.09	3.03	.75	31.5					
CH 3	87-88	9.6	73	2480	1665	83.3	42.2		426.4	4.39	11.12		2.21	70.9	1.22				1.14
CH 3	88-89	9.7	73	2273	1496	94.6	39.1		449.6	4.88	11.31	.56	1.45	72.4	1.50				1.28
CH 3	89-90	9.9	72	2056	1564	78.4	36.0		416.6	4.62	9.05	1.29	3.10	90.9	4.72				2.79
CH 3	90-91	8.6	73	2252	1484	75.9	35.1		416.4	4.31	10.47	1.09	1.13	119.7					
CH 3	91-92	9.4	71			57.8	30.5			4.39	21.39	4.14	2.60	93.5					
FIN 4	87-88	5.9	76	3322	1623	18.6	20.0		625.9	4.24	1.06	.41	.31	58.8					
FIN 4	88-89	6.0	77	3717	1904	11.8	17.6		768.6	4.39	1.70	.72	1.06	33.1					
FIN 4	89-90	6.4	80	4127	1926	13.9	20.7		657.0	4.41	1.88	.85	1.61	31.6					
FIN 4	90-91	5.2	82	3834	1627	24.9	24.9		649.8	4.36	2.99	1.05	1.75	32.8					
FIN 4	91-92	6.2	79	4271	1693	2.4	24.1		671.7	4.43	1.84	.81	2.04	29.2					
FIN 5	87-88	3.1	78	2810	1566	6.3	5.0	52	801.3	4.53	.71	.33	.26	19.1	.05	.15		.02	.04
FIN 5	88-89	4.0	79	3159	1731	5.3	4.9	54	666.4	4.52	.61	.28	.28	18.7	.13	.12		.02	.06
FIN 5	89-90	3.9	80	3342	1714	1.8	4.4	52	670.7	4.57	.47	.27	.28	16.6	.13	.08		.02	.07
FIN 5	90-91	2.9	80	3012	1480	1.8	5.6	51	543.5	4.55	.57	.28	.24	18.0	.16	.10		.03	.13
FIN 5	91-92	4.2	78	3240	1440	.8	2.0	66	698.4	4.58	.51	.29	.31	16.4	.23	.12		.04	.07

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE			GASES			PRECIPITATION						PRE-OPTIONS					
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
FIN 6	87-88	6.3	78	3453	1635	20.7	30.5		673.1	4.41	1.54	.46	.89	36.4					
FIN 6	88-89	6.7	78	3813	1904	17.4	27.4		691.0	4.42	2.63	1.08	2.11	39.2					
FIN 6	89-90	6.8	80	4017	1926	15.3	38.9		665.6	4.26	2.03	.82	1.97	44.0					
FIN 6	90-91	5.8	81	3820	1627	18.2	38.3		636.9	4.28	2.54	.98	2.33	42.2					
FIN 6	91-92	6.9	80	4080	1693	6.0	41.2		621.5	4.51	1.86	.83	2.08	35.3					
FRG 7	87-88	9.3	80	4561	1374	13.7	11.3	59	630.6	4.26	1.59	.82	1.01	42.0	.47	.56	.10	.13	
FRG 7	88-89	10.0	81	4867	1615	11.4	13.0	69	448.4	4.35	1.47	.86	1.42	39.4	.65	.72	.16	.18	
FRG 7	89-90	10.2	80	4390	1688	11.0	11.6	64	499.7	4.45	1.35	1.12	1.66	37.9	.80	.67	.18	.19	
FRG 7	90-91	8.9	81	4474	1548	12.9	11.9	45	529.1	4.47	.99	.61	.98	28.2	.46	.49	.12	.19	
FRG 7	91-92	10.2	78	4406	1669	7.3	11.5	53	503.4	4.55	.98	.66	1.18	27.6	.68	.52	.14	.18	
FRG 8	87-88	12.3	77	3508		23.7	33.2	27	626.9	4.96	2.44	1.17	1.87	44.6		1.87			
FRG 8	88-89	11.8	72	3756		14.6	44.8	26	673.8	4.61	2.10	1.08	2.09	50.3		1.41			
FRG 8	89-90	12.2	67	2541	1882	14.2	39.5	31	655.4	4.39	2.63	.93	2.75	75.3					
FRG 8	90-91	10.9	65	4227	1761	18.9	38.0	29	653.8	4.94	2.20	.90	1.89	48.5		2.77	2.01	1.80	
FRG 8	91-92	11.7	66	4611	1702	15.6	41.2	36		5.79	1.68	.65	1.03	60.8	1.12	1.87	.85		
FRG 9	87-88	10.7	77	4220	1315	24.5	42.8	30	782.9										
FRG 9	88-89	11.2	78	4754	1475	25.7	49.9	27	686.0										
FRG 9	89-90	11.7	80	4940	1624	20.3	44.4	33	697.6	4.44	1.75	.74	1.75	39.0	1.41	.92	.18	.26	
FRG 9	90-91	7.9	80	4365	1471	23.8	45.8	32	661.7	4.41	1.88	.77	1.41	38.1	.89	1.17	.19	.39	
FRG 9	91-92	10.7	76	6517		19.9	40.1	36		4.56	1.65	.79	1.51	52.6	1.40	1.66	.18	.38	
FRG 10	87-88	11.2	75	4077	1430	50.6	47.9		873.8										
FRG 10	88-89	11.6	76	4594	1690	48.6	49.5		733.7										
FRG 10	89-90	12.0	76	4107	1812	48.5	46.4		696.6	4.60	2.69	.81	5.35	54.6	2.22	1.72	.38	1.28	
FRG 10	90-91	8.4	78	4002	1644	53.0	46.8	27	619.4	4.30	2.38	.71	1.79	43.7	1.23	1.35	.28	.36	
FRG 10	91-92	11.1	77	6521		53.5	43.7	33		4.69	1.89	.74	1.61	51.3	1.23	1.34	.28	.32	

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE				GASES			PRECIPITATION						PRE-OPTIONS				
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
FRG11	87-88	10.5	79	4537	1430	30.3	46.8		713.1										
FRG11	88-89	10.9	78	4711	1690	27.6	44.3		663.9										
FRG11	89-90	11.5	77	4040	1812	25.6	41.7		644.5										
FRG11	90-91	8.0	80	4216	1644	24.4	41.9		577.5										
FRG11	91-92	12.9	78	7092		27.1	40.6												
FRG12	87-88	7.5	82		1598	9.4	12.1	51	1491.5										
FRG12	88-89	7.9	84	4983	1629	13.4	14.0	49	1185.4										
FRG12	89-90	7.3	82	4201	1940	6.1	14.3	55	1183.1										
FRG12	90-91	7.6	82		1654	5.2	12.6	57	1118.3										
FRG12	91-92	8.7	80		1686	4.2	14.1	65											
ITA13	87-88	15.4	66	1013		29.4	69.2	26	591.4										
ITA13	88-89	16.1	62	1611		44.9	69.5	27	509.3										
ITA13	89-90	17.4	65	2267		38.5	62.5	23	463.3										
ITA13	90-91	16.3	67			24.4	73.3	19	480.5				34.1						
ITA13	91-92	22.2	58																
ITA14	87-88	14.6	71	3578					650.2										
ITA14	88-89	14.0	70	2996					674.2										
ITA14	89-90	14.3	72	3714		7.4	8.3	56	626.1										
ITA14	90-91	15.1	72	3577		6.4	18.8	45	721.0										
ITA14	91-92	14.9	74	3881		4.7	16.6	38	972.6										
ITA15	87-88	15.3	72	3548		72.2	109.2	18	1124.7										
ITA15	88-89	14.9	79	3458		82.7	99.1	16	1003.7										
ITA15	89-90	15.4	72	3036		65.4	120.9	22	659.8										
ITA15	90-91	14.2	69	2941		50.3	107.8	21	658.4										
ITA15	91-92	14.4	73	3402		58.5	110.0	17	936.1										

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE			GASES			PRECIPITATION						PRE-OPTIONS					
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
ITA16	87-88	14.5	76	3561		21.1	40.9	21	714.0	5.02	3.70	.89	3.58	56.6					
ITA16	88-89	14.7	82	4530		25.7	40.7	29	535.8	4.90	4.69	1.13	4.32	72.0					
ITA16	89-90	13.5	79	4148		20.2	51.0	31	488.0	5.24	3.70	1.10	3.21	59.1					
ITA16	90-91	12.9	80	4565		16.4	47.7	14	809.9	6.12	2.18	.77	3.56	48.7					
ITA16	91-92	13.6	86			18.6			511.0	6.49	2.86	1.07	4.53	50.7					
NL17	87-88	10.5	84	5875	1313	35.3	52.1	28	977.7	4.44	1.52	.51	4.86	48.6	2.49	.51	.32	.15	
NL17	88-89	11.0	83	5589	1663	31.8	57.2	33	685.9	4.41	1.55	.59	4.61	48.9	2.53	.33	.31	.18	
NL17	89-90	11.3	81	4996	1810	32.5	56.7	32	692.0	4.42	1.79	.54	7.64	59.7	4.20	.45	.51	.26	
NL17	90-91	9.7	84	5293	1474	30.6	53.8	28	722.6	4.48	1.81	.66	4.44	50.4	2.35	.50	.30	.24	
NL17	91-92	10.7	85	1520	1520	27.8	47.3	26		4.98	1.78	.46	7.39	65.9	4.16	.60	.54	.79	
NL18	87-88	9.9	83	5459	1230	10.1	23.2	40	904.2	5.45	1.52	.54	1.88	30.1	1.11	.22	.11	.11	
NL18	88-89	10.2	82	5280	1507	8.0	26.9	46	710.5	5.50	1.38	.54	2.87	32.2	2.33	.21	.19	.12	
NL18	89-90	10.9	79	4482	1643	8.5	26.5	47	705.9	5.34	1.63	.60	2.96	35.6	1.77	.24	.18	.28	
NL18	90-91	9.1	79	4422	1410	9.5	24.6	38	701.8	5.51	1.22	.49	1.68	25.6	1.19	.15	.11	.15	
NL18	91-92	10.2	79	1475	1475	8.0	23.5	39		5.27	1.12	.44	2.34	26.4	1.31	.21	.16	.21	
NL19	87-88	10.3	81	5354	1292	13.0	28.7	36	845.0	5.32	1.61	.57	1.50	31.0	.95	.33	.12	.12	
NL19	88-89	10.8	81	5282	1585	10.2	33.4	39	693.3	5.33	1.61	.60	2.00	30.9	1.07	.28	.14	.09	
NL19	89-90	11.0	81	4969	1709	9.9	33.1	45	569.1	5.31	2.29	.69	3.58	43.6	2.09	.40	.28	.26	
NL19	90-91	9.3	80	4401	1484	10.4	33.4	37	543.9	5.74	1.68	.53	1.82	30.2	1.08	.21	.11	.19	
NL19	91-92	10.4	80	1533	1533	8.1	32.5	38		5.33	1.45	.36	1.94	25.2	1.12	.18	.13	.13	
NL20	87-88	10.3	81	5125	1290	13.7	28.9	39	801.3	4.73	1.63	.66	1.61	35.4	.94	.69	.15	.14	
NL20	88-89	10.8	80	5208	1553	11.2	32.0	42	642.2	4.65	1.59	.65	1.72	35.4	.94	.48	.12	.11	
NL20	89-90	11.2	77	4424	1698	10.3	26.9	45	608.8	4.98	1.47	.54	2.37	32.0	1.41	.51	.19	.20	
NL20	90-91	9.5	83	4824	1434	12.9	31.7	39	647.0	4.93	1.68	.60	1.52	31.5	.84	.44	.12	.17	
NL20	91-92	10.5	82	1488	1488	11.0	29.1	36		4.88	1.23	.40	1.46	25.6	.87	.33	.11	.17	

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE			GASES			PRECIPITATION							PRE-OPTIONS				
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
NOR21	87-88	7.6	70	2673	1565	14.4	51.7		1023.8	4.48	1.36	.62	1.45	29.3	.37	.64	1.72		
NOR21	88-89	7.9	70	2580	1747	12.6	51.9	22	576.8	4.66	2.08	.66	1.72	35.5	.43	.72	2.64		
NOR21	89-90	8.8	70	2864	1841	7.9	46.8	16	526.6	4.49	1.73	.70	1.86	38.1	.53	.91	1.58	.17	.14
NOR21	90-91	7.0	75	3013	1686	8.6	51.9		433.1	4.71	1.41	.64	1.64	30.5	.66	.87	1.51	.19	.17
NOR21	91-92	8.5	72	3169		6.6	47.1		614.0	4.65	1.24	.48	1.54	27.6	.37	.85	1.33	.17	.14
NOR22	87-88	6.0	78	3064		35.8	19.2		1115.5	3.93	2.93	.71	2.21	63.8	1.11	1.14	.46		
NOR22	88-89	6.9	74	3445		54.0	18.3		535.4	3.96	3.28	.97	4.85	74.9	1.46	2.47	.97		
NOR22	89-90	6.8	76	3678		41.5	16.4		517.5	4.07	2.42	.64	3.67	64.9	1.44	1.80	.52	.23	.38
NOR22	90-91	6.7	77	3599		30.7	18.0		286.2	3.96	2.70	.99	4.10	73.5	1.59	1.75	.56	.22	.24
NOR22	91-92	7.8	73	3384		31.1	16.6		673.6	4.18	2.03	.67	4.36	57.4	1.12	1.89	.56	.25	.21
NOR23	87-88	6.5	80	4831	1717	1.3	3.9	60	2144.3	4.25	.93	.56	2.04	32.2	.57	1.19	.15	.14	.17
NOR23	88-89	7.5	76	4043	2002	1.1	4.0	53	1160.6	4.26	1.07	.70	2.47	39.9	.69	1.40	.20	.18	.20
NOR23	89-90	7.4	77	4193	1901	.9	3.1	54	1762.2	4.38	.87	.56	2.88	35.2	.50	1.61	.39	.19	.15
NOR23	90-91	6.1	80	4114	1820	1.1	3.1	55	1287.6	4.35	.92	.53	3.35	36.2	.52	1.78	.32	.22	.17
NOR23	91-92	7.1	77	4122		.8	1.8	64	1272.0	4.35	.83	.54	2.07	32.5	.45	1.15	.10	.14	.08
SWE24	87-88	7.6	78	3959	1616	16.8	26.5	44	531.0	4.35	1.14	.52	.42	31.7	.51	.23	.27	.05	.04
SWE24	88-89	8.4	67	2543	1978	12.6	31.2	47	412.0	4.28	1.16	.45	.49	32.0	.39	.22	.32	.05	.03
SWE24	89-90	8.7	70	3074	1837	8.4	31.6	52	473.2	4.44	.90	.41	.44	23.9	.34	.24	.93	.05	.11
SWE24	90-91	7.3	72	3643	1527	6.3	27.3	39	643.4	4.57	.61	.32	.34	18.1	.31	.20	.20	.04	.02
SWE24	91-92	8.6	70	2945		5.7	28.1	45	496.0	4.58	.80	.42	.54	25.8	3.32	.25	.18	.04	.03
SWE25	87-88	7.6	78	3959	1616	19.6	45.8		531.0	4.35	1.14	.52	.42	31.7	.51	.23	.27	.05	.04
SWE25	88-89	9.1	67	2543	1978	20.0	45.4		412.0	4.28	1.16	.45	.49	32.0	.39	.22	.32	.05	.03
SWE25	89-90	8.7	70	3074	1831	10.3	40.2		473.2	4.44	.90	.41	.44	23.9	.34	.24	.93	.05	.11
SWE25	90-91	7.3	72	3643	1527	2.7	26.2		643.4	4.57	.61	.32	.34	18.1	.31	.20	.20	.04	.02
SWE25	91-92	8.6	70	2945		3.9	25.3		496.0	4.58	.80	.42	.54	25.8	3.32	.25	.18	.04	.03

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE				GASES			PRECIPITATION						PRE-OPTIONS					
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l	
SWE26	87-88	6.0	83	4534	1673	3.3	5.1	55	542.7	4.27	1.30	.60	.54	32.6	.71	.40	.27	.08	.11	
SWE26	88-89	6.9	77	3407	1902	1.9	4.5	61	377.0	4.28	1.31	.64	.61	34.6	.78	.44	.26	.07	.11	
SWE26	89-90	7.6	77	3469	1817	2.0	4.8	59	342.3	4.37	1.02	.56	.63	32.6	.52	.45	.20	.07	.14	
SWE26	90-91	6.1	80	3315	1555	2.6	3.8	54	516.5	4.46	.84	.44	.74	25.7	.46	.50	.17	.07	.08	
SWE26	91-92	7.2	77	3438	1837	1.8	3.6	58	412.6	4.45	.78	.46	.68	22.6	.48	.33	.12	.06	.09	
UK 27	87-88	9.2	84	6230		17.7	68.6		364.9	4.86	1.69	.75	2.09	41.4	.98	.66	2.74	.13	.34	
UK 27	88-89	10.7	83	5583		19.6	54.2		288.8	4.11	2.22	.75	5.20	67.0	.91	2.24	1.85	.30	.18	
UK 27	89-90	11.1	81	5510		15.5	33.0		308.2	4.20	1.67	.47	3.34	42.9	.55	1.33	1.29	.24	.13	
UK 27	90-91	10.0	87	6310		20.2	28.3		206.3	4.30	2.14	.81	4.62	67.4	.98	2.15	1.76	.42	.48	
UK 27	91-92	11.0	86	5839		20.4	29.9		404.1	4.47	1.50	.55	3.40	45.6	.74	1.29	1.20	.27	.46	
UK 28	87-88	11.2	86	5715		7.2	21.5		447.1	5.44	1.22	.32	4.11	46.3	.88	3.47	.93	.32	.48	
UK 28	88-89	12.2	75	5625		6.6	24.7		455.6	5.42	1.21	.43	3.75	51.2	1.91	2.97	1.02	.29	2.00	
UK 28	89-90	12.7	82	5995		6.9	25.1		415.8	5.09	1.64	.39	6.89	58.6	1.88	5.13	1.03	.39	1.60	
UK 28	90-91	12.0	88	6628		5.0	22.1		535.6	6.22	2.87	.76	7.86	90.9	5.82	5.71	1.50	.51	4.15	
UK 28	91-92	12.9	88			6.4	22.1			6.08	1.77	.68	3.78	59.1	2.66	3.78	1.41	.35	1.37	
UK 29	87-88	9.8				4.3	2.3	49	1702.9	4.82	.66	.19	4.08		.27	2.36	.32	.38	.15	
UK 29	88-89	10.9				3.2	4.1	62	1683.5	4.61	.84	.20	4.74		.29	2.65	.32	.28	.19	
UK 29	89-90	10.7	96			3.5	4.2	57	2046.3	4.84	1.18	.06	10.87		.32	6.00	.74	.60	.49	
UK 29	90-91	6.7				5.2	4.6	45												
UK 29	91-92																			
UK 30	87-88	10.2	78	3763		15.0	86.0	89	609.5	4.12	2.17	.55	3.87		.19	1.68	1.08	.21	.22	
UK 30	88-89	9.2	75	6163		9.1	34.2		628.8	4.13	1.89	.36	4.43		.92	1.85	1.07	.28	.19	
UK 30	89-90					12.1	30.0		648.2	3.84	1.38	.29	5.05		.44	2.20	.80	.31	.24	
UK 30	90-91					27.4	39.2		498.5	3.18	2.37	.36	4.59		2.96	1.82	2.47	.38	.79	
UK 30	91-92					8.7	25.1		588.9	4.66	1.20	.45	1.90		.66	1.09	1.32	.12	.30	

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE				GASES			PRECIPITATION						PRE-OPTIONS				
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
SPA31	87-88	14.1	66	2762	2606	18.4	24.3	26	398.0	5.26	1.43	.33	.61	26.5	.84	1.71	.23	.15	
SPA31	88-89	15.0	52	974	2894	18.1	31.9		322.1	6.42	2.49	.45	.69	25.9	.63	1.89	.21	.19	
SPA31	89-90	16.3	54	1160	2648	15.3	22.8		331.5	5.14	1.23	.45	.73	31.7	.65	2.69	.18	.11	
SPA31	90-91	14.4	57	1555	2843	10.3	20.1		307.9	6.14	1.26	.37	.62	25.8	.78	1.91	.21	.10	
SPA31	91-92	13.8	59	1447	2576	8.6	21.9		309.8	6.46	1.34	.37	.54	26.2	.43	1.57	.14	.10	
SPA32	87-88	15.2	74	4221	1368	35.2	34.7		1355.4	4.73	8.95	2.28	6.67	54.9	2.69	3.69			
SPA32	88-89	15.3	73	4245	1840	49.1	43.0		773.5	5.32	14.26	3.54	9.71	79.0	3.28	7.02			
SPA32	89-90	16.2	71	3769	1879	41.4	41.8		890.7	4.71	13.26	3.83	9.00	78.9	3.28	6.86			
SPA32	90-91	13.9	74	4536	1577	23.5	31.6		1110.8	5.00	8.61	2.98	6.65	57.1	2.75	4.33	.00	.00	
SPA32	91-92	14.2	77		1629	7.1	32.8		1031.9	5.02	9.54	3.29	8.14	63.6	3.04	5.42	.40	.27	
SPA33	87-88	14.0	64	2275	2432	3.3	9.1		785.0	5.27	.45	.12	.51	11.2	.65	.49	.12	.24	
SPA33	88-89	15.1	59	1848	2665	8.6	14.8		426.9	5.23	.59	.10	.47	13.4	.45	.58	.08	.08	
SPA33	89-90	15.5	61	2147	2573	13.5	16.3		610.4	6.20	.60	.20	.72	11.3	.74	1.21	.12	.14	
SPA33	90-91	13.9	56	945	2609	6.0	16.1		477.1	5.74	.41	.17	.54	13.4	.47	.56	.09	.06	
SPA33	91-92	13.6	58	1426	2661	4.6	14.9		539.6	5.73	.70	.23	.53	13.4	.36	.49	.07	.08	
SOV34	87-88	5.5	73	2084	1580	19.2	74.9		575.4	6.18	1.44	.06	1.30	28.8					
SOV34	88-89	7.0	75	2682	1590	25.5	69.5		612.7	4.89	3.09	.15	.53	45.8					
SOV34	89-90	5.7	76	2894	1592	30.8	50.1		860.2	6.22	2.56	.14	.33	29.4					
SOV34	90-91	6.0	75	2589	1502	26.0	53.2		801.8	6.12	2.35	.15	.43	38.5					
SOV34	91-92	7.2	72	1960		28.0	38.7		534.4	6.07	1.87	.15	.56	36.7					
EST35	87-88	5.5	83	4092	1571	.9	2.9		447.8	4.66	1.11	.30		.28	.39	.88			
EST35	88-89	6.9	80	3609	1871	.3	3.8		588.5	4.50	.87	.30		.23	.56	.29			
EST35	89-90	6.7	81	4332	1850	.6	6.5		532.7	4.65	.75	.31	.81	19.9	.55	.51	.08	.42	
EST35	90-91	5.5	83	4272	1634		5.3		564.0	4.76	.81	.26	.48	15.1	.28	1.06	.05	.29	

*: Not corrected for sea-salt sulphate.

Table 2, cont.

SITE	YEAR	CLIMATE				GASES				PRECIPITATION							PRE-OPTIONS				
		TEMP °C	RH	TOW h	SUN h	SO ₂ µg/m ³	NO ₂ µg/m ³	O ₃ µg/m ³	MM	pH	SO ₄ -S* mg/l	NO ₃ -N mg/l	Cl mg/l	COND µS/cm	NH ₄ -N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l		
POR36	87-88	12.1	64	1575		6.8	36.8		972.0	6.06	11.63	1.01	3.18	63.5	2.73	2.56			.34		
POR36	88-89	17.8	61	2338	4560	11.9	21.5	35	625.4	5.46	9.80	1.71	4.15	62.0	2.74	4.07		.64	.58		
POR36	89-90	19.3	63	3033	3758	6.6	32.9	29	1103.1	5.57	5.31	1.90	3.99	53.2	2.52	1.95		.42	.45		
POR36	90-91	18.2	62			11.3	30.1	42	954.5	5.37		1.45	3.37	51.0	4.08	1.97		.36	.50		
POR36	91-92	18.2	60	1734		41.1	45.7	25		5.54		1.51	1.89	76.9	1.45	4.73		.19	.19		
CAN37	87-88	5.5	75	3252	2138	3.3	1.6	59	961.1	4.27	.89	.62	.14	27.9	.07	.26					
CAN37	88-89	4.8	73	2676	1985	4.2	2.0	60	953.6	4.33	.81	.51	.12	24.8	.06	.18					
CAN37	89-90	5.1	79	3431	1996	3.0	2.0	64	1103.0	4.38	.76	.53	.11	25.0	.04	.22					
CAN37	90-91	5.9	79	3566	2061	2.7	1.0	52	1057.0	4.34	.75	.46	.08	23.8	.03	.14					
CAN37	91-92	3.8	75	3078	1628	2.1		61	983.0	4.40	.69	.46	.13	23.4	.06	.13					
USA38	87-88	14.6	69	3178	2610	9.6	26.9	54	846.7	4.29	.73	.28	.36	24.9	.17	.06		.03	.04		
USA38	88-89	15.0	66		2229	10.0	25.3	51	1412.8	4.29	.75	.28	.24	23.4	.10	.05		.02	.03		
USA38	89-90	16.3	49		2421	9.2	25.3	57	1106.7	4.45	.61	.24	.36	19.6	.16	.06		.02	.03		
USA38	90-91	15.5	51		2238	7.9	25.2	52	1093.3	4.43	.59	.28	.47	20.9	.21	.08		.03	.04		
USA38	91-92	14.2	45			15.4	29.1	45		4.77	.47	.35	.36	14.7	.22	.07		.04	.03		
USA39	87-88	12.3	67	2111	1942	58.1	41.8	42	733.1	4.00	1.76	.51	.48	54.0	.09	.40		.07	.07		
USA39	88-89	10.9	64	1781	1769	59.4	44.8	36	932.8	3.91	1.82	.49	.35	54.9	.05	.35		.06	.04		
USA39	89-90	11.2	61	1319	1713	55.2	40.5	33	967.4	4.08	2.00	.46	.46	46.3	.09	.56		.08	.06		
USA39	90-91	13.6	59	1737	1787	64.2	50.9	44	937.6	3.88	1.74	.52	.83	45.4	.29	.87		.25	.19		
USA39	91-92	10.8	56			58.2	37.1	41		4.21	1.95	.33	.36	40.9	.03	.35		.09	.03		

*: Not corrected for sea-salt sulphate.

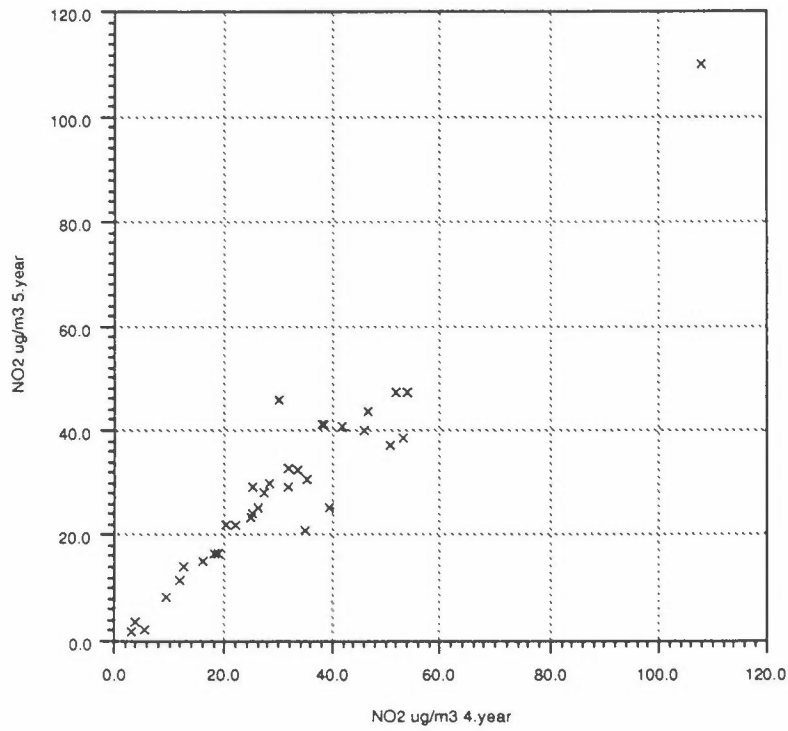


Figure 1: Scatterplot for NO₂ yearly mean values for the fourth versus the fifth year results.

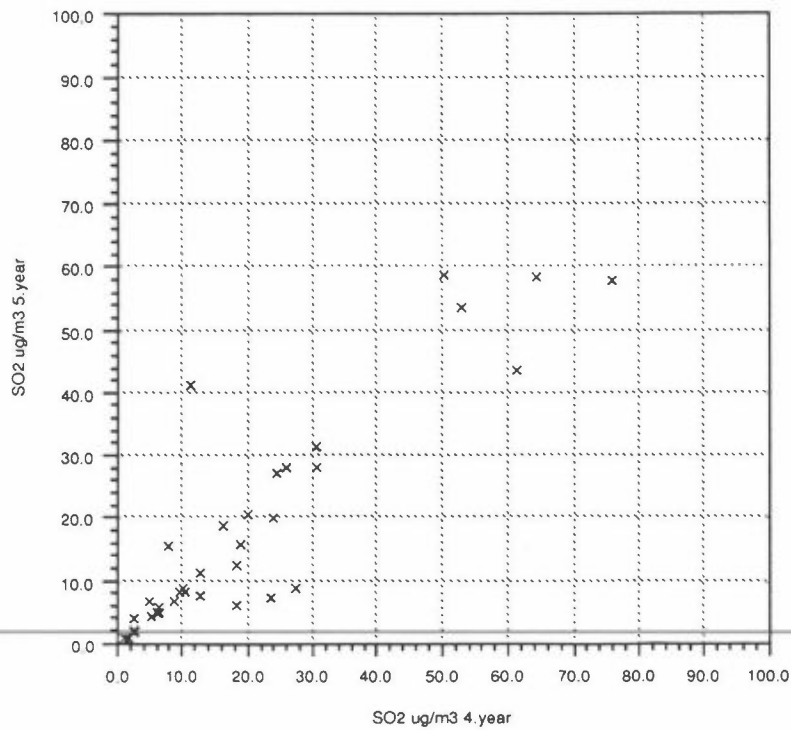


Figure 2: Scatterplot for SO₂ yearly mean values for the fourth versus the fifth year results.

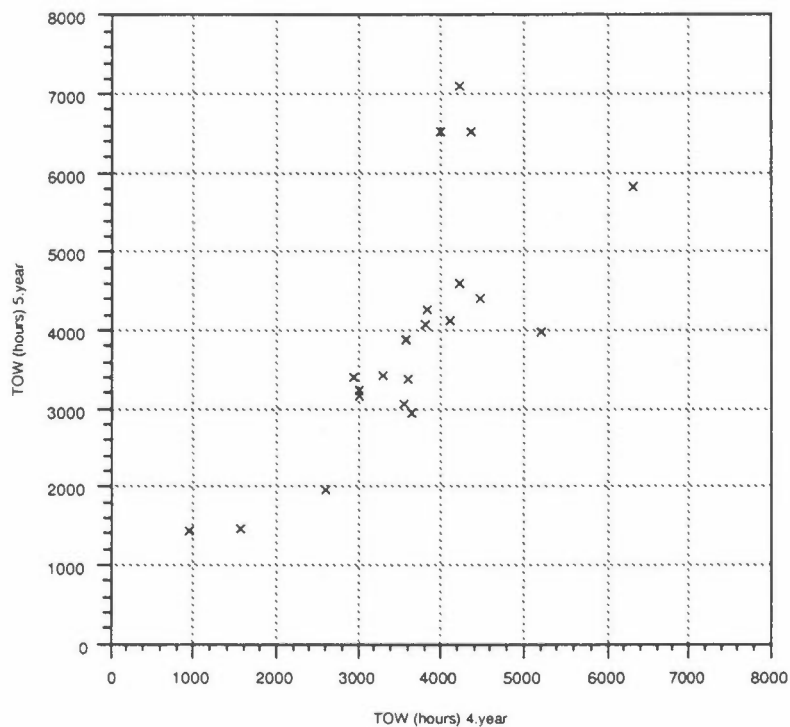


Figure 3: Scatterplot for TOW yearly mean values for the fourth versus the fifth year results.

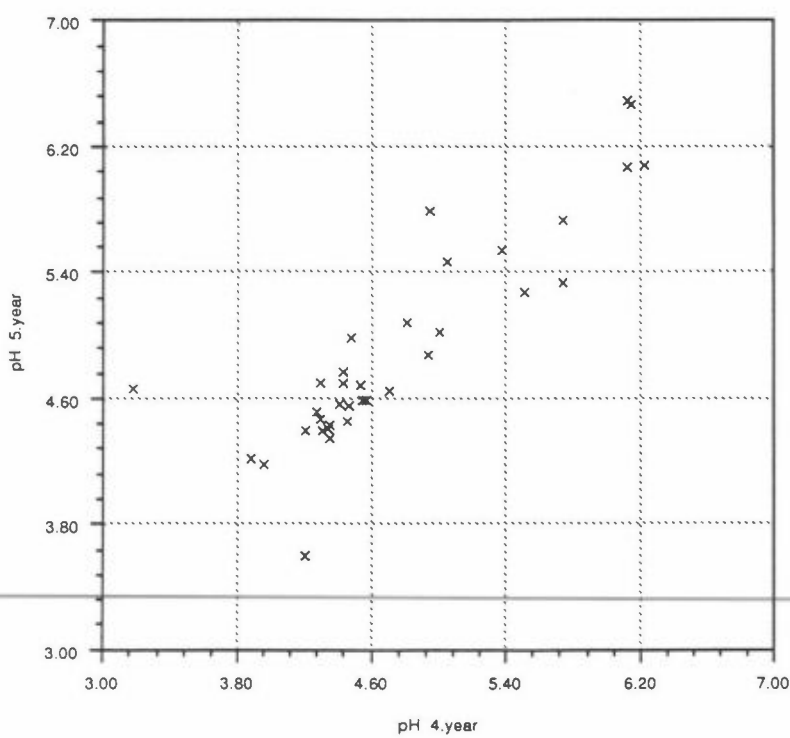


Figure 4: Scatterplot for pH yearly mean values for the fourth versus the fifth year results.

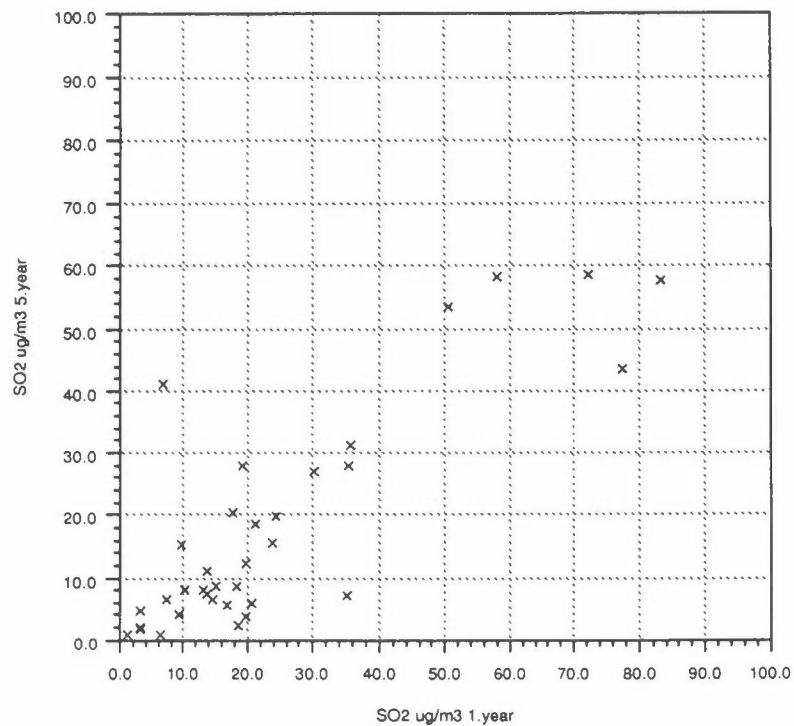
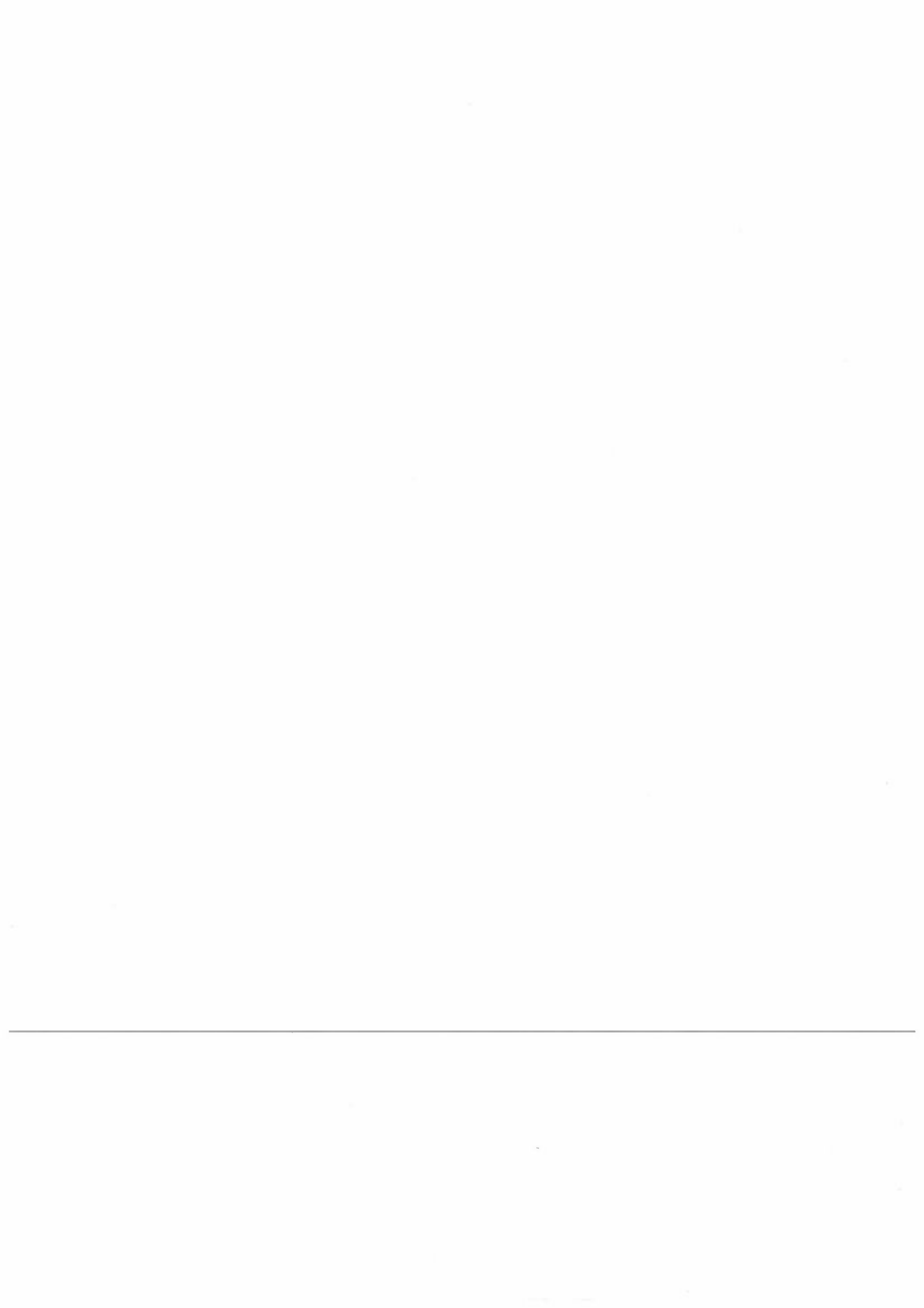


Figure 5: Scatterplot for SO₂ yearly mean values for the first versus the fifth year results.

Annex A



ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (01) Prague-Letnany, Czechoslovakia

Sep91

Date	CLIMATE		GASES		mm	PRECIPITATION			PRECIPITATION			Cond uS/cm					
	Temp C	Rh %	S02 ug/m3	N02 ug/m3		pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	NH4-N mg/l	Na mg/l		Ca mg/l	Mg mg/l	K mg/l		
Oct91	8.1	70.	282.	211.	35.9	20.3	8.3	4.72	23.00	16.00	3.00	133.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	100%	83%													
Nov91	3.2	85.	144.	106.	41.9	20.4	51.4	4.45	6.00	2.00	.25	50.0					
	d	d	d	xd	m	m	m	m	m	m	m	m					
	100%	100%	83%	43%													
Dec91	-7	83.	115.	119.	74.7	24.9	30.8	5.39	9.00	4.00	1.00	45.5					
	d	d	*d	xd	m	m	m	m	m	m	m	m					
	100%	100%	54%	41%													
Jan92	1.1	80.	166.	58.	83.9	31.7	21.4	4.40	11.00	5.20	2.20	51.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	83%	100%													
Feb92	2.7	79.	175.	54.	70.6	26.2	12.4	3.60	22.00	11.00	2.40	105.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	93%	100%													
Mar92	4.5	75.	267.	155.	48.9	21.1	33.2	4.30	8.40	5.40	.80	44.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	100%	80%													
Apr92	8.9	63.	238.	197.	43.0	21.0	17.7	6.50	17.00	2.00	1.80	94.5					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	100%	83%													
May92	15.4	55.	215.	314.	24.2	15.1	17.8										
	d	d	d	d	m	m	m										
	100%	100%	100%	96%													
Jun92	18.8	55.	237.	235.	24.7	15.3	64.4	5.50	7.30	1.60	.25	28.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	96%	96%													
Jul92	20.2	62.	260.	288.	17.4	16.5	57.4	3.90	13.20	3.90	1.60	55.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	96%	90%													
Aug92	21.8	62.	312.	261.	16.0	18.8	80.0	5.80	8.60	.25	.25	24.0					
	d	d	d	d	m	m	m	m	m	m	m	m					
	100%	100%	100%	96%													
Mean	9.5	71.			43.7	21.0		4.39	10.03	3.10	.88	46.4					
	m	m			m	m	m	m	m	m	m	m					

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (02) Kasperske Hory, Czechoslovakia

Date	CLIMATE		GASES		PRECIPITATION				PRECIPITATION					
	Temp C	Rh %	SO2 ug/m3	NO2 ug/m3	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91														
Oct91	5.3 d	78. d	7.6 m	8.4 m	11.1 m	7.00 m	5.20 m	1.20 m	40.5 m					
Nov91	1.2 d	85. d	12.6 m	7.8 m	65.7 m	4.80 m	2.40 m	1.00 m	27.5 m					
Dec91	-3.0 d	81. d	14.6 m	9.2 m	63.9 m	2.80 m	1.40 m	.90 m	29.0 m					
Jan92	-7.7 d	78. d	23.9 m	11.3 m	16.8 m	7.60 m	4.60 m	1.80 m	39.0 m					
Feb92	.2 d	78. d	15.9 m	10.6 m	30.0 m	5.20 m	4.60 m	1.30 m	40.0 m					
Mar92	1.9 d	77. d	16.4 m	8.3 m	83.7 m	3.20 m	3.80 m	.50 m	31.0 m					
Apr92	5.4 d	69. d	9.9 m	4.7 m	64.3 m	3.10 m	4.00 m	.25 m	26.0 m					
May92	12.5 d	60. d	11.9 m	5.1 m	23.2 m	6.10 m	5.30 m	.70 m	48.0 m					
Jun92	14.6 d	72. d	10.7 m	5.5 m	85.9 m	5.30 m	2.50 m	.25 m	41.0 m					
Jul92	17.1 d	64. d	6.8 m	7.9 m	67.1 m	5.23 m	2.30 m	1.40 m	24.0 m					
Aug92	19.2 d	61. d	5.2 m	11.9 m	41.8 m	2.50 m	2.10 m	.50 m	23.0 m					
Mean	6.7 m	73. m	12.3 m	8.2 m	3.60 m	4.09 m	3.03 m	.75 m	31.5 m					

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (03) Kopisty, Czechoslovakia

Date	C L I M A T E		G A S E S		mm	P R E C I P I T A T I O N			P R E C I - O P T I O N									
	Temp C	Rh %	Tow hours	Sun hours		S02 ug/m3	N02 ug/m3	O3 ug/m3	pH	S04-S mg/l	N03-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91																		
Oct91	8.1	73.	345.	178.	55.4	34.5		7.9	7.30	64.00	6.00	7.50	460.0					
	d	d	d	d	m	m		m	m	m	m	m	m					
	100%	100%	100%	90%														
Nov91	3.0	84.	115.	101.	57.1	29.2		26.1	6.30	23.00	5.00	1.50	117.0					
	d	d	d	xd	m	m		m	m	m	m	m	m					
	100%	100%	83%	36%														
Dec91	- .3	81.	127.	88.	88.8	38.3		55.6	4.45	19.00	3.00	1.90	69.0					
	d	d	*d	xd	m	m		m	m	m	m	m	m					
	100%	100%	61%	38%														
Jan92	1.3	79.	166.	116.	65.3	34.0		9.3	4.47	64.00	15.00	5.50	215.0					
	d	d	d	*d	m	m		m	m	m	m	m	m					
	100%	100%	83%	51%														
Feb92	2.7	80.	155.	96.	72.4	36.0		16.9	4.35	52.00	13.00	3.70	155.0					
	d	d	d	*d	m	m		m	m	m	m	m	m					
	100%	100%	89%	58%														
Mar92	4.4	74.	235.	139.	54.8	28.3		29.5	3.81	22.00	6.00	1.60	82.0					
	d	d	d	*d	m	m		m	m	m	m	m	m					
	100%	100%	100%	64%														
Apr92	8.9	59.	291.	167.	58.7	28.0		81.5	4.97	20.00	5.00	1.20	79.5					
	d	d	d	d	m	m		m	m	m	m	m	m					
	100%	100%	96%	86%														
May92	15.8	54.	273.	314.	40.6	23.9		19.6	3.49	33.00	2.60	3.60	92.0					
	d	d	d	d	m	m		m	m	m	m	m	m					
	100%	100%	100%	93%														
Jun92	19.1	64.	238.	206.	44.1	24.8		77.5	4.26	19.20	6.50	8.20	99.0					
	d	d	d	d	m	m		m	m	m	m	m	m					
	100%	100%	100%	96%														
Jul92	20.2	65.	250.	241.	49.7	24.0		100.9	5.67	12.00	.50	.25	80.0					
	d	d	d	d	m	m		m	m	m	m	m	m					
	100%	100%	100%	93%														
Aug92	20.7	67.	332.	254.	48.7	34.2		54.6	5.58	18.20	1.70	1.00	59.0					
	d	d	d	d	m	m		m	m	m	m	m	m					
	100%	100%	100%	96%														
Mean	9.4	71.			57.8	30.5		4.39	21.39	4.14	2.60	93.5						
	m	m			m	m		m	m	m	m	m	m					

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (04) Espoo, Finland

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N				
	Temp C	Rh %	Tow Sun hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	9.9	79.	458.	21.0			60.9	4.20	2.70	1.00	1.60	40.0					
	m	m	m	m			d	m	m	m	m	m					
							100%										
Oct91	6.0	88.	558.	36.0			53.9	4.30	1.60	.80	1.00	31.0					
	d	m	m	m			d	m	m	m	m	m					
							100%										
Nov91	3.4	89.	527.	2.0	25.0		116.1	4.30	1.60	.90	2.50	33.0					
	m	m	m	m	m		d	m	m	m	m	m					
							100%										
Dec91	-9	88.	365.	2.0	21.0		38.7	4.40	3.80	1.90	12.50	36.0					
	m	m	m	m	m		m	m	m	m	m	m					
Jan92	-7	82.	294.	2.0	21.0		38.9										
	m	m	m	m	m		d										
							100%										
Feb92	-1	84.	252.	3.0	21.0		50.6										
	m	m	m	m	m		d										
							100%										
Mar92	1.0	89.	414.	4.0	26.0		57.8										
	m	m	m	m	m		d										
							100%										
Apr92	1.9	80.	351.	3.0	31.0		62.4	4.50	1.80	.80	.60	35.0					
	m	m	m	m	m		d	m	m	m	m	m					
							100%										
May92	10.8	68.	238.	3.0	25.0		13.4	4.90	1.50	.60	1.40	19.0					
	m	m	m	m	m		d	m	m	m	m	m					
							100%										
Jun92	15.0	60.	154.	3.0	25.0		7.6	5.40	2.00	.90	1.10	20.0					
	m	m	m	m	m		d	m	m	m	m	m					
							100%										
Jul92	16.7	70.	246.	1.0	16.0		31.0	4.50	2.10	.70	.70	23.0					
	m	m	m	m	m		m	m	m	m	m	m					
Aug92	12.1	70.	414.	1.0	21.0		140.4	4.80	1.20	.40	.40	19.0					
	m	m	m	m	m		d	m	m	m	m	m					
							100%										
Mean	6.2	79.	4271.	2.4	24.1		671.7	4.43	1.84	.81	2.04	29.2					
	m	m	m	m	m		m	m	m	m	m	m					

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (05) Ahtari, Finland

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N			P R E C . - O P T I O N										
	Temp C	Rh %	Sun hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	pH	mm	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l	
Sep91	7.4	82.	447.	.5	1.7	d	133.0	4.65	.54	.18	.20	14.7	.25	.10	.09	.01	.07	
	100%	d	m	100%	d	100%	d	d	d	d	d	d	d	d	d	d	d	d
Oct91	4.4	89.	537.	.7	2.2	40.	49.3	4.36	.71	.47	.51	26.2	.25	.26	.10	.04	.07	
	100%	d	m	100%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
Nov91	1.6	88.	438.	.6	2.5	50.	57.6	4.51	.46	.40	.36	18.5	.25	.23	.07	.03	.09	
	100%	d	m	100%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
Dec91	-3.8	87.	138.	1.1	2.8	56.	54.2	4.75	.41	.31	.61	13.2	.14	.75	.57	.19	.22	
	100%	d	m	100%	d	*d	d	d	d	d	d	d	d	d	d	d	d	d
Jan92	-4.8	84.	63.	.9	2.9	62.	42.1	5.11	.18	.15	1.29	10.7	.10	.89	.10	.10	.11	
	100%	d	m	100%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
Feb92	-4.4	85.	90.	1.1	2.4	66.	45.4	4.53	.29	.41	.20	15.9	.17	.13	.06	.02	.08	
	100%	d	m	100%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
Mar92	-6.84.	84.	282.	2.3	1.7	79.	55.1	4.51	.55	.53	.27	20.8	.46	.19	.06	.02	.03	
	100%	d	m	100%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
Apr92	-8.75.	75.	132.	1.1	1.3	89.	45.9	4.61	.45	.24	.12	14.4	.14	.12	.08	.02	.02	
	100%	d	m	100%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
May92	10.1	60.	174.	.5	1.8	91.	16.1	4.19	1.75	.44	.20	38.9	.87	.18	.13	.03	.18	
	100%	d	m	96%	d	d	d	d	d	d	d	d	d	d	d	d	d	d
Jun92	14.7	57.	168.	.5	2.0	86.	13.1	4.64	.41	.28	.13	13.8	.20	.10	.19	.05	.20	
	100%	d	m	100%	d	*d	d	d	d	d	d	d	d	d	d	d	d	d
Jul92	14.0	69.	294.	.3	1.3	58.	86.2	4.61	.50	.16	.08	13.7	.23	.08	.10	.02	.03	
	100%	d	m	100%	d	*d	d	d	d	d	d	d	d	d	d	d	d	d
Aug92	12.5	81.	477.	.3	.8	52.	100.4	4.60	.50	.25	.15	14.6	.26	.12	.08	.02	.03	
	100%	d	m	100%	d	*d	d	d	d	d	d	d	d	d	d	d	d	d
Mean	4.2	78.	3240.	.8	2.0	66.	698.4	4.58	.51	.29	.31	16.4	.25	.23	.12	.04	.07	
	100%	d	m	99%	d	d	d	d	d	d	d	d	d	d	d	d	d	d

ECE--PROGRAMME ON EFFECTS ON MATERIALS SITE: (06) Helsinki-Vallila, Finland

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C . - O P T I O N						
	Temp C	Rh %	Tow Sun hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	10.8 d	81. m	420. m	144. d	7.0 m	30.0 m	60.4 d	4.20 m	3.50 m	1.30 m	2.10 m	50.0 m				
	100%		100%				100%									
Oct91	6.8 d	88. m	558. m	60. d	13.0 m	49.0 m	53.9 d	4.10 m	2.10 m	.90 m	1.90 m	48.0 m				
	100%		100%				100%									
Nov91	4.2 d	88. m	546. m	29. d	6.0 m	34.0 m	87.5 d	4.60 m	1.30 m	.80 m	3.10 m	37.0 m				
	100%		100%				100%									
Dec91	1.1 d	86. m	342. m	43. d	6.0 m	37.0 m	25.9 d	4.70 m	3.30 m	1.80 m	11.50 m	49.0 m				
	100%		100%				100%									
Jan92	1.7 d	82. m	294. m	72. d	7.0 m	46.0 m	52.4 d									
	100%		100%				100%									
Feb92	1.3 d	87. m	282. m	72. d	5.0 m	33.0 m	42.4 d									
	100%		100%				100%									
Mar92	1.4 d	85. m	420. m	26. d	10.0 m	45.0 m	56.2 d									
	100%		100%				100%									
Apr92	2.4 d	79. m	300. m	94. d	4.0 m	43.0 m	50.6 d	4.40 m	1.90 m	.90 m	.60 m	43.0 m				
	100%		100%				100%									
May92	10.9 d	66. m	192. m	322. d	3.0 m	51.0 m	15.9 d	4.50 m	2.20 m	1.20 m	2.50 m	33.0 m				
	100%		100%				100%									
Jun92	15.0 d	60. m	114. m	350. d	3.0 m	43.0 m	16.9 d	6.90 m	2.00 m	.70 m	2.50 m	41.0 m				
	100%		100%				100%									
Jul92	16.7 d		246. m	315. d	5.0 m	43.0 m	31.0 d	5.10 m	1.80 m	.60 m	1.00 m	21.0 m				
	100%		100%				100%									
Aug92	15.3 d	80. m	366. m	166. d	3.0 m	41.0 m	128.4 d	5.10 m	1.00 m	.40 m	.30 m	19.0 m				
	100%		100%				100%									
Mean	5.9 d	80. m	4080. m	1693. d	6.0 m	41.2 m	621.5 d	4.51 m	1.86 m	.83 m	2.08 m	35.3 m				
	100%		100%				100%									

ECE-PROGRAMME ON EFFECTS ON MATERIALS										SITE: (07) Waldhof-Langenbrugge, Fed. Rep. of Germany									
Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C. - O P T I O N			P R E C. - O P T I O N						
	Temp C	Rh %	Tow hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	CL mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l		
Sep91	15.0	76.	371.	6.6	8.7	61.	36.8	4.35	1.34	.92	1.13	38.2	.97	.56	.80	.17	.32		
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	96%	93%	100%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%		
Oct91	9.8	84.	429.	8.1	12.7	53.	29.8	4.73	1.23	.81	2.63	35.5	.87	3.20	.91	.26	.36		
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	100%	100%	100%	100%	96%	95%	95%	95%	96%	95%	95%	95%	95%	95%		
Nov91	4.6	90.	549.	12.0	18.1	24.	48.4	4.56	.73	.46	.77	20.5	1.98	.33	.63	.14	.20		
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	90%	96%	100%	100%	98%	95%	95%	95%	97%	95%	95%	95%	95%	95%		
Dec91	2.1	89.	460.	16.4	19.8	27.	48.0	4.68	.42	.26	1.79	22.7	.14	.96	.27	.14	.12		
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	100%	100%	100%	100%	98%	97%	97%	97%	98%	97%	97%	97%	97%	97%		
Jan92	2.0	91.	416.	10.9	15.6	32.	36.3	4.44	.78	.57	1.21	30.5	.51	.53	.28	.11	.14		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	97%	95%	95%	95%	97%	95%	95%	95%	95%	95%		
Feb92	4.0	90.	476.	4.6	16.2	31.	29.5	4.49	1.30	1.41	3.53	41.7	1.04	1.73	.55	.30	.22		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	98%	94%	94%	94%	97%	94%	90%	90%	90%	90%		
Mar92	5.0	83.	444.	10.1	10.5	46.	72.6	4.84	.94	.53	1.62	22.0	.72	.80	.49	.18	.16		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%		
Apr92	8.2	76.	333.	4.7	8.2	57.	49.8	4.53	.92	.63	.57	26.1	.70	.27	.38	.08	.10		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	98%	97%	97%	97%	98%	97%	97%	97%	97%	97%		
May92	14.9	64.	192.	5.4	6.2	72.	18.5	4.46	1.39	.95	1.14	34.3	1.37	.58	.54	.13	.17		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%		
Jun92	19.1	60.	175.	3.4	5.9	79.	30.4	4.47	1.19	.45	.27	24.5	.64	.10	.65	.11	.07		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%		
Jul92	19.4	65.	244.	3.0	7.5	83.	38.5	4.45	1.14	.75	.27	28.7	1.00	.11	.52	.10	.10		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	98%	97%	97%	97%	98%	98%	97%	97%	97%	97%		
Aug92	19.0	72.	317.	2.3	8.3	76.	64.8	4.53	.95	.72	.35	25.5	.79	.15	.50	.09	.22		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%		
Mean	10.2	78.	4406.	7.3	11.5	53.	503.4	4.55	.98	.66	1.18	27.6	.87	.68	.52	.14	.18		
	d	d	d	m	m	m	d	d	d	d	d	d	d	d	d	d	d		
	100%	100%	100%	m	m	m	100%	98%	97%	97%	97%	98%	97%	97%	97%	97%	89%		

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (08) Aschaffenburg, Fed.Rep.of Germany

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N				
	Temp C	Rh %	Tow hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	18.0	59.	268.	10.0	46.0	38.	41.2	5.97	1.57	.65		28.1	.43		1.21	.81	
Oct91	10.1	70.	594.	14.0	47.0		32.9	6.15	1.78	.85	1.19	35.0	.73		.78	1.12	
Nov91	5.5	77.	634.	15.0	42.0	15.	70.8	5.92	.92	1.33		20.7			.60	.52	
Dec91	1.4	76.	432.	27.0	52.0	12.											
Jan92	2.4	73.	304.	41.0	51.0	9.											
Feb92	4.0	74.	503.	21.0	55.0	14.											
Mar92	7.2	66.	435.	13.0	47.0	25.											
Apr92	10.6	69.	273.	13.0	33.0	49.	28.7	6.00	2.09	1.27	.74	36.6	.49	.66	.96	.91	.54
May92	17.8	52.	207.	10.0	28.0	74.	51.5	5.76	1.43	.58	.17	27.0	.66	.24	.92	.55	.77
Jun92	19.6	60.	340.	9.0	30.0	52.	61.6	5.23	1.43	.47	.12	21.3	.56	.12	.60	.49	.22
Jul92	21.6	59.	275.	7.0	33.0	55.	16.0	6.53	2.39	.82	.52	49.2	1.46	.44	1.95	1.37	.65
Aug92	22.2	60.	346.	7.0	31.0	54.	108.6	6.54	2.23	.10	2.06	153.6	11.56	2.32	4.69	1.25	3.68
Mean	11.7	66.	4611.	15.6	41.2	36.		5.79	1.68	.65	1.03	60.8	4.12	1.12	1.87	.85	1.80

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (09) Langenfeld-Reusrath, Fed.Rep.of Germany

Date	CLIMATE		GASES			PRECIPITATION				PRECIPITATION						
	Temp C	Rh %	S02 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	383.	m			34.		4.60	1.44	.57	.54	28.6	.79	.43	1.30	.08	.38
Oct91	10.0 d 100%100%	80. m	17.9 d 96%	35.6 d 96%	21. m	29.1 d 100%	4.60	2.39	1.79	4.44	61.7	1.34	3.01	1.73	.37	.82
Nov91	5.0 d 100%100%	83. m	21.8 d 100%	40.1 d 100%	20. m	71.5 d 100%	4.80	1.12	.48	2.99	31.4	.47	3.07	.53	.13	.61
Dec91	3.4 d 100%100%	82. m	28.7 d 96%	44.3 d 100%	17. m	61.9 d 100%	4.50	1.42	.53	2.60	67.1	.65	1.54	.49	.16	.04
Jan92	2.9 m	85. m	32.0 m	47.0 m	15. m	27.4 m	4.30	4.15	2.06	4.64	31.6	3.10	6.45	9.86	.50	2.61
Feb92	5.2 m	83. m	31.0 m	50.0 m	20. m	27.3 m	4.80	1.76	.80	2.34	40.3	2.07	3.39	2.37	.40	.89
Mar92	7.3 m	76. m	14.0 m	38.0 m	36. m	62.1 m	4.50	1.91	1.06	1.76	40.5	1.79	1.34	1.04	.25	.12
Apr92	9.5 m	71. m	23.0 m	41.0 m	43. m	63.1 m	4.20	1.68	1.14	1.06	53.9	1.61	.44	.83	.15	.18
May92	15.6 m	62. m	16.0 m	38.0 m	63. m	30.0 m	4.60	2.06	.75	1.05	48.3	.98	.66	1.40	.11	.41
Jun92	17.7 m	72. m	11.0 m	36.0 m	56. m	110.9 m	4.80	1.58	.66	.35	61.3	.98	.52	2.38	.12	.27
Jul92	19.8 m	71. m	12.0 m	37.0 m	58. m	65.0 m	4.50	1.37	.57	.33	52.1	.50	.24	.94	.11	.11
Aug92	19.8 m	73. m	12.0 m	34.0 m	49. m	96.6 m	4.80	1.15	.43	.10	64.2	.63	.30	1.40	.16	.10
Mean	10.7 m	76. m	19.9 m	40.1 m	36. m	4.56 m	4.56	1.65	.79	1.51	52.6	1.08	1.40	1.66	.18	.38

ECE--PROGRAMME ON EFFECTS ON MATERIALS SITE: (10) Bottrop, Fed.Rep.of Germany

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N			P R E C . - O P T I O N						
	Temp C	Rh %	S02 ug/m3	NO2 ug/m3	SO4-S mg/l	NO3-N mg/l	CL mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l	
Sep91	34.3	m			4.90	2.61	.73	2.02	43.1	1.76	1.39	2.24	.32	.72
Oct91	10.6	78.	49.6	46.9	15.8	5.20	4.50	1.60	9.03	112.8	1.20	7.00	5.48	1.42
	d	d	d	d	d	d	m	m	m	m	m	m	m	m
	100%	100%	96%	83%	100%									
Nov91	6.1	85.	60.8	48.1	113.6	4.80	1.30	.32	1.72	22.7	.79	1.43	.67	.19
	d	d	d	d	d	d	m	m	m	m	m	m	m	m
	100%	100%	96%	90%	93%	100%								
Dec91	3.6	82.	74.2	46.3	5.	4.60	.95	.46	2.39	15.5	.55	2.02	.43	.24
	d	d	d	d	d	d	m	m	m	m	m	m	m	m
	100%	100%	100%	87%	61%	100%								
Jan92	2.9	84.	90.0	52.0	14.	4.60	3.04	.86	3.59	36.1	2.04	1.57	2.14	.35
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Feb92	5.4	82.	73.0	56.0	16.	5.10	2.51	1.57	1.26	42.2	1.20	1.87	3.24	.48
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mar92	7.3	76.	46.0	43.0	32.	4.70	2.35	.70	1.81	39.2	1.59	1.39	1.07	.28
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Apr92	9.6	73.	49.0	45.0	47.	4.50	2.42	.87	1.23	69.7	1.67	.43	1.36	.38
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
May92	16.7	65.	47.0	47.0	59.	5.20	2.05	.91	.89	59.1	1.00	.95	2.87	.43
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Jun92	18.8	71.	26.0	34.0	61.	4.40	2.23	1.04	.45	75.1	1.43	.42	.88	.17
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Jul92	20.7	71.	37.0	33.0	56.	4.90	2.22	1.27	.29	68.4	1.10	.36	2.18	.24
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Aug92	19.9	76.	36.0	29.0	43.	4.80	1.46	.55	.92	82.6	.75	.53	1.07	.16
	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mean	11.1	77.	53.5	43.7	33.	4.69	1.89	.74	1.61	51.3	1.09	1.23	1.34	.28
	m	m	m	m	m	m	m	m	m	m	m	m	m	m

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (11) Essen-Leithe, Fed.Rep.of Germany

Date	C L I M A T E		G A S E S		mm	P R E C I P I T A T I O N			P R E C . - O P T I O N						
	Temp C	Rh %	S02 ug/m3	NO2 ug/m3		O3 ug/m3	pH	SO4-S mg/l	NO3-N mg/l	CL mg/l	Cond US/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l
Sep91	354.					4.80	1.55	.70	2.19	34.2	.99	1.69	1.73	.21	.66
Oct91	10.4 d 100%	81. d 100%	20.6 d 80%	43.3 d 100%	23.7 d 100%	5.00	3.08	1.24	6.04	72.8	1.66	3.35	3.38	1.08	1.69
Nov91	6.2 d 100%	85. d 100%	24.0 d 96%	46.1 d 100%	89.0 d 100%	4.80	1.06	.38	1.64	20.1	.70	1.93	.38	.09	.06
Dec91	3.6 d 100%	83. d 100%	43.7 d 100%	49.6 d 100%	71.5 d 100%	4.50	1.27	.34	3.68	9.6	.96	2.14	.48	.19	.04
Jan92	28.0 m	86. m	51.0 m	54.0 m	17.7 m	4.70	1.86	1.00	2.44	23.1	1.63	2.53	1.61	.27	.49
Feb92	5.2 m	84. m	42.0 m	51.0 m	21.3 m	4.80	2.92	1.26	2.76	35.2	2.35	1.92	1.97	.34	.22
Mar92	7.2 m	77. m	26.0 m	38.0 m	70.1 m	4.70	1.94	.74	1.60	32.6	1.73	1.08	.73	.23	.11
Apr92	9.2 m	73. m	23.0 m	39.0 m	55.7 m	4.40	1.81	1.13	1.18	55.8	1.65	.36	.92	.20	.13
May92	16.0 m	65. m	19.0 m	33.0 m	28.0 m	4.60	1.90	.82	1.03	63.4	1.07	.78	1.30	.20	.66
Jun92	17.2 m	75. m	22.0 m	33.0 m	72.6 m	4.40	1.98	.71	.44	70.9	1.13	.48	.84	.16	.25
Jul92	19.4 m	72. m	14.0 m	31.0 m	74.3 m	5.30	1.23	.67	.31	53.6	.83	.44	1.77	.24	.30
Aug92	19.2 m	76. m	13.0 m	29.0 m	110.7 m	5.10	1.17	.44	.12	61.8	.63	.39	.12	.19	.18
Mean	12.9 m	78. m	27.1 m	40.6 m	4.69 m	4.69	1.59	.66	1.46	44.9	1.11	1.13	.89	.22	.24

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (12) Garmisch-Partenkirch., Fed. Rep. of Germany

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N			P R E C I P I T A T I O N									
	Temp C	Rh %	Tow hours	Sun hours	S02 ug/m3	N02 ug/m3	O3 ug/m3	mm	pH	S04-S mg/l	N03-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91			169.	m													
Oct91			130.	m													
Nov91			71.	m													
Dec91			54.	m													
Jan92	3.0	89.	75.	m	12.6	36.0	27.	4.7	5.07	.52	.60	.77	16.0	.55	.32	.38	.04
Feb92	-2.87.		208.	m	8.0	24.7	44.	82.5	4.90	.39	.33	.16	12.0	.23	.07	.14	.02
Mar92	3.4	81.	294.	m	3.7	16.0	67.	158.4	5.28	.26	.24	.15	7.7	.23	.06	.21	.02
Apr92	6.3	78.	360.	m	2.6	11.1	75.	103.7	4.79	.86	.70	.25	20.1	.62	.12	.44	.04
May92	12.6	72.	338.	m	1.1	6.8	86.	22.4	5.87	1.75	1.03	.37	27.7	1.21	.21	.97	.42
Jun92	14.5	78.	422.	m	2.6	6.5	78.	135.6	4.85	.82	.45	.18	17.3	.45	.10	.28	.11
Jul92	17.2	79.	408.	m	1.7	6.1	74.	164.2	5.32	.71	.40	.15	13.2	.55	.08	.29	.06
Aug92	18.8	75.	385.	m	1.7	5.9	69.	119.2	5.80	.56	.38	.20	11.6	.52	.08	.35	.06
Mean	8.7	80.	1686.	m	4.2	14.1	65.	5.08		.63	.42	.19	13.8	.46	.09	.31	.06

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (13) Rome, Italy

Date	CLIMATE		GASES			mm	PRECIPITATION				PRECIPITATION				
	Temp C	Rh %	S02 ug/m3	N02 ug/m3	O3 ug/m3		pH	SO4-S mg/l	NO3-N mg/l	CL mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l
Sep91	24.2 d		1.7 d		20. d	149.8 d									
	83%		83%		83%	100%									
Oct91	22.9 xd		1.8 xd												
	6%		6%												
Nov91															
Dec91															
Jan92			13.4 xd		7. xd										
			19%		19%										
Feb92			4.0 xd		9. xd	10.2 d									
			62%		62%	100%									
Mar92			1.4 d		12. d	69.0 d									
			100%		100%	100%									
Apr92	14.8 d		.4 xd		16. d	75.0 d									
	100%		10%		86%	100%									
May92	20.1 d														
	56. d														
Jun92	21.7 d														
	60. d														
Jul92	25.2 d														
	55. d														
Aug92	27.1 d														
	57. d														
Mean	22.2 *m		2.4 xm		14. xm										

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (114) Casaccia, Italy

Date	C L I M A T E		G A S E S			P R E C I P I T A T I O N			P R E C . - O P T I O N								
	Temp C	Rh %	Sun hours	S02 ug/m3	N02 ug/m3	O3 ug/m3	mm	pH	S04-S mg/l	N03-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	21.4	78	384	.7	32.	32.	93.0	5.27	.76	.13	1.02	20.3		.61	.30	.10	.08
	d	d	d	d	*d	*d	d	d	d	d	d	d		d	d	d	d
	100%	100%	100%	100%	70%	70%	100%	100%	100%	100%	100%	100%		100%	100%	100%	100%
Oct91	14.9	82	468	2.1			315.0	6.04	.43	.10	1.12	11.8		.68	.17	.10	.08
	d	d	d	d			d	d	d	d	d	d		d	d	d	d
	93%	93%	93%	77%			100%	100%	100%	100%	100%	100%		100%	100%	100%	100%
Nov91	10.6	87	524	3.3	24.0	m	184.8	5.48	.60	.13	3.60	22.5		1.66	.36	.25	.09
	d	d	d	d	m		d	d	d	d	d	d		d	d	d	d
	100%	100%	100%	80%			100%	100%	100%	100%	100%	100%		100%	100%	100%	100%
Dec91	6.2	65	177	7.6			.0										
	d	d	d	d			m										
	100%	100%	100%	100%													
Jan92	7.6	80	432	6.5	22.5		33.2	6.62	.77	.15	1.72	18.0					
	d	d	d	d	*d		d	d	d	d	d	d					
	90%	90%	90%	100%	64%		100%	100%	100%	100%	100%	100%					
Feb92	8.3	74	344	6.5	16.5		10.7	5.35	.89	.17	1.41	19.2					
	d	d	d	*d	*d		d	d	d	d	d	d					
	100%	100%	100%	68%	27%		100%	100%	100%	100%	100%	100%					
Mar92	10.3	77	400	6.1	20.3	32.	75.0	6.35	1.95	.13	5.57	59.4					
	d	d	d	d	d	d	d	d	d	d	d	d					
	100%	100%	100%	96%	87%	100%	100%	100%	100%	100%	100%	100%					
Apr92	12.2	77	348	3.8	10.0	41.	68.8	4.60	1.23	.16	2.84	32.6					
	d	d	d	d	*d	d	d	d	d	d	d	d					
	86%	86%	86%	90%	66%	93%	100%	100%	100%	100%	100%	100%					
May92	18.1	66	201	6.0	8.9	40.	30.3	5.93	2.00	.25	.69	32.9					
	d	d	d	d	*d	d	d	d	d	d	d	d					
	87%	87%	80%	100%	67%	100%	100%	100%	100%	100%	100%	100%					
Jun92	19.5	71	267	3.6	14.2	36.	86.9	6.09	1.23	.13	1.39	22.4					
	d	d	d	d	*d	d	d	d	d	d	d	d					
	100%	100%	100%	100%	73%	100%	100%	100%	100%	100%	100%	100%					
Jul92	23.4	65	178	5.0	10.9	34.	69.3	7.07	.86	.13	.54	20.0					
	d	d	d	d	*d	d	d	d	d	d	d	d					
	100%	100%	100%	77%	22%	100%	100%	100%	100%	100%	100%	100%					
Aug92	25.8	63	137				8.6	6.10				19.0					
	d	d	d				d	d				d					
	95%	96%	90%				100%	100%				100%					
Mean	14.9	74	3881	4.7	16.6	38.	972.6	5.47	.84	.13	2.04	22.3		.97	.25	.15	.08
	d	d	d	m	*m	*m	m	m	m	m	m	m		*m	*m	*m	*m
	95%	96%	95%														

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (15) Milan, Italy

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C. - O P T I O N							
	Temp C	Rh %	Tow hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	21.6 d	68 d	271. d	28.2 d	96.0 d	19. d	152.6 d	4.71 d				24.6 d					
	100%	100%	100%	100%	100%	100%	100%	89%				89%					
Oct91	13.5 d	79 d	403. d	57.4 d	69.4 d	7. d	81.4 d	5.20 d				14.9 d					
	100%	100%	100%	100%	100%	100%	100%	97%				97%					
Nov91	8.3 d	82. d	443. d	112.4 d	120.9 d	6. d	63.2 d	4.58 d				24.6 d					
	100%	100%	100%	100%	100%	100%	100%	95%				95%					
Dec91	4.0 d	77. d	191. d	167.2 d	144.6 d	5. d	1.0 d	6.12 d				80.0 d					
	100%	100%	100%	100%	100%	100%	100%	80%				80%					
Jan92	3.2 d	89. d	418. d	143.8 d	134.9 d	5. d	32.4 d	4.01 d				79.3 d					
	100%	100%	100%	100%	100%	100%	100%	96%				96%					
Feb92	6.8 d	77. d	328. d	92.4 d	136.4 d	6. d	34.0 d	4.07 d				52.7 d					
	100%	100%	100%	100%	100%	100%	100%	99%				99%					
Mar92	10.9 d	68. d	194. d	43.5 d	120.4 d	9. d	29.2 d	5.16 d				25.1 d					
	100%	100%	100%	100%	100%	100%	100%	99%				99%					
Apr92	13.7 d	70. d	279. d	21.5 d	88.8 d	11. d	143.3 d	4.82 d				26.3 d					
	100%	100%	96%	100%	100%	96%	100%	99%				99%					
May92	20.0 d	64. d	206. d	12.6 d	100.8 d	25. d	81.6 d	5.51 d				20.4 d					
	100%	100%	100%	100%	100%	100%	100%	98%				98%					
Jun92	20.2 d	65. d	242. d	11.3 d	111.8 d	31. d	91.0 d	5.22 d				20.2 d					
	100%	100%	100%	100%	100%	100%	100%	98%				98%					
Jul92	24.3 d	63. d	196. d	4.5 d	125.6 d	35. d	174.6 d	4.58 d				20.2 d					
	100%	100%	100%	100%	100%	100%	100%	100%				100%					
Aug92	26.4 d	70. d	231. d	7.1 d	71.4 d	47. d	51.8 d	4.92 d				25.1 d					
	100%	100%	100%	100%	100%	100%	100%	98%				98%					
Mean	14.4 d	73. d	3402. d	58.5 d	110.0 d	17. d	936.1 d	4.68 d				25.4 d					
	100%	100%	99%	100%	100%	99%	100%	97%				97%					

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (16) Venice, Italy

Date	C L I M A T E		G A S E S			P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N						
	Temp C	Rh %	Tow hours	Sun hours	S02 ug/m3	N02 ug/m3	O3 ug/m3	mm	pH	S04-S mg/l	N03-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	20.4	81.	408.					22.0	6.60	4.29	1.53	9.25	69.1					
	d	d	d					d	d	d	d	d	d					
	93%	93%	96%					100%	100%	100%	100%	100%	100%					
Oct91	13.4	88.	532.					72.0	6.91	2.15	.49	3.00	40.6					
	d	*d	*d					d	d	d	d	d	d					
	80%	58%	58%					100%	100%	100%	100%	100%	100%					
Nov91					21.0			116.0	6.25	1.46	.64	7.52	28.5					
					d			d	d	d	d	d	d					
					96%			100%	100%	100%	100%	100%	100%					
Dec91	3.6	81.	375.		34.0			4.0	6.80	17.30	1.90	5.80	173.0					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Jan92	4.0	89.	516.		34.1			14.0	7.21	3.00	.95	4.10	57.2					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		96%			100%	100%	100%	100%	100%	100%					
Feb92	4.3	92.	538.		24.4			18.0	6.94	7.10	1.25	4.00	101.8					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Mar92	7.5	89.	574.		17.5			22.0	6.40	4.57	1.46	3.00	73.7					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Apr92	11.7	85.	462.		10.0			52.0	6.68	3.49	1.46	7.21	84.1					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
May92	18.2	80.	400.		11.4			41.0	6.60	3.67	1.60	2.30	50.4					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Jun92	19.5	86.	508.		10.0			78.0	6.48	2.03	.92	2.25	38.3					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Jul92	22.7	89.	563.		12.7			25.0	6.59	2.90	1.47	2.04	46.4					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Aug92	24.8	89.	573.		11.1			47.0	6.44	2.94	1.66	2.27	56.1					
	d	d	d		d			d	d	d	d	d	d					
	100%	100%	100%		100%			100%	100%	100%	100%	100%	100%					
Mean	13.6	86.			18.6			511.0	6.49	2.86	1.07	4.53	50.7					
	m	m			m			d	d	d	d	d	d					
								100%	100%	100%	100%	100%	100%					

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (17) Vlaardingen, Netherlands

Date	C L I M A T E		G A S E S			mm	P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N					
	Temp C	Rh %	Sun hours	SO2 ug/m3	NO2 ug/m3		O3 ug/m3	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l	
Sep91	15.0	85.	474.	19.5	54.7	27.	101.8	5.74	2.41	.57	3.85	85.4	6.29	2.15	.50	.33	1.74	
	m	m	m	d	d	m	w	w	w	w	w	w	w	w	w	w	w	w
				100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct91	10.6	87.	89.	25.5	49.0	12.	83.7	5.44	1.73	.42	15.24	77.4	.57	8.53	1.16	1.11	.44	
	m	m	m	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m
				100%	100%													
Nov91	6.0	93.	34.	48.7	48.5	13.	87.1	4.51	1.09	.40	4.80	41.6	.48	2.68	.24	.32	.16	
	m	m	m	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m
				100%	86%													
Dec91	4.4	90.	55.	37.3	46.5	8.	36.3	6.12	1.77	.37	5.44	43.2	1.78	3.30	.48	.36	.46	
	m	m	m	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m
				100%	100%													
Jan92	3.0	93.	37.	30.6	50.2	5.												
	m	m	m	d	d	m												
				100%	100%													
Feb92	5.3	88.	75.	43.6	54.3	9.												
	m	m	m	d	d	m												
				86%	100%													
Mar92	7.2	85.	85.	27.8	43.4	23.												
	m	m	m	d	d	m												
				96%	96%													
Apr92	8.8	81.	129.	28.0	49.9	30.												
	m	m	m	d	d	m												
				100%	100%													
May92	15.3	72.	276.	24.0	47.6	53.												
	m	m	m	d	d	m												
				100%	100%													
Jun92	16.8	77.	217.	12.2	43.3	51.												
	m	m	m	d	d	m												
				100%	93%													
Jul92	18.1	81.	200.	20.8	43.7	41.												
	m	m	m	d	d	m												
				100%	100%													
Aug92	18.0	83.	156.	18.1	37.1	37.												
	m	m	m	d	d	m												
				100%	100%													
Mean	10.7	85.	1520.	27.8	47.3	26.	4.98	1.78	.46	7.39	65.9	2.57	4.16	.60	.54	.79		
	m	m	m	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m
				98%	98%													

ECE--PROGRAMME ON EFFECTS ON MATERIALS SITE: (18) Eibergen, Netherlands

Date	C L I M A T E		G A S E S		mm	P R E C I P I T A T I O N			P R E C . - O P T I O N				
	Temp C	Rh %	S02 ug/m3	N02 ug/m3		pH	S04-S mg/l	N03-N mg/l	CL mg/l	Cond us/cm	NH4-N mg/l	Ca mg/l	Mg mg/l
Sep91	14.7	75.	6.3	22.3	104.4	6.22	1.13	.59	1.68	26.6	.92	.20	.15
	m	m	d	d	w	w	w	w	w	w	w	w	w
	125.		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct91	9.4	80.	8.1	28.4	44.6	6.32	1.22	.37	6.04	39.2	3.31	.48	.47
	m	m	d	d	m	m	m	m	m	m	m	m	m
	96.		100%	100%									
Nov91	5.0	90.	9.2	31.7	91.9	4.85	1.08	.41	1.06	22.4	.70	.12	.24
	m	m	d	d	m	m	m	m	m	m	m	m	m
	31.		100%	93%	96%								
Dec91	3.2	88.	15.4	31.8	69.6	5.39	1.10	.32	2.67	23.4	1.43	.16	.08
	m	m	d	d	m	m	m	m	m	m	m	m	m
	48.		100%	100%	83%								
Jan92	2.2	91.	9.2	26.9	43.								
	m	m	d	d	m								
	43.		100%	87%	90%								
Feb92	4.7	87.	7.9	31.8	64.								
	m	m	d	d	m								
	64.		100%	100%	100%								
Mar92	6.4	82.	6.2	21.5	79.								
	m	m	d	d	m								
	79.		100%	100%	100%								
Apr92	8.3	76.	6.8	20.3	124.								
	m	m	d	d	m								
	124.		96%	90%	93%								
May92	15.4	64.	9.9	14.3	280.								
	m	m	d	d	m								
	280.		100%	100%	100%								
Jun92	17.0	70.	5.1	16.2	221.								
	m	m	d	d	m								
	221.		100%	100%	100%								
Jul92	18.2	71.	5.0	18.8	208.								
	m	m	d	d	m								
	208.		100%	100%	100%								
Aug92	18.0	75.	5.7	19.1	156.								
	m	m	d	d	m								
	156.		83%	90%	90%								
Mean	10.2	79.	8.0	23.5	1475.	5.27	1.12	.44	2.34	26.4	1.31	.21	.21
	m	m	d	d	m	m	m	m	m	m	m	m	m
	1475.		98%	96%	96%								

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (19) Vredepeel, Netherlands

Date	CLIMATE		GASES		mm	PRECIPITATION			PRECIPITATION			PRECIPITATION						
	Temp C	Rh %	Sun hours	Tow hours		SO2 ug/m3	NO2 ug/m3	O3 ug/m3	pH	SO4-S mg/L	NO3-N mg/L	CL mg/L	Cond uS/cm	NH4-N mg/L	Na mg/L	Ca mg/L	Mg mg/L	K mg/L
Sep91	15.6	73	351	130	6.3	39.8	39	45.6	5.86	1.71	.50	1.72	31.5	1.98	1.09	.25	.13	.24
	m	m	m	m	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct91	10.2	81	101		9.4	47.9	21	36.8	6.00	1.32	.37	2.74	28.4	1.40	1.55	.32	.20	.11
	m	m	m		d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Nov91	5.3	90	37		8.4	38.4	23	135.1	5.14	1.48	.35	1.07	20.6	1.13	.65	.12	.07	.12
	m	m	m		d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	96%	86%											
Dec91	3.6	87	53		13.3	35.2	14	73.2	5.40	1.28	.30	3.29	28.1	1.19	1.79	.16	.21	.10
	m	m	m		d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	70%	77%											
Jan92	2.2	89	48		8.9	30.1												
	m	m	m		d	d												
	100%	100%	100%		100%	77%												
Feb92	4.5	86	70		11.1	37.2	21											
	m	m	m		d	d	d											
	100%	100%	100%		100%	89%	75%											
Mar92	6.7	82	83		7.0	27.0	39											
	m	m	m		d	d	d											
	100%	100%	100%		100%	100%	100%											
Apr92	8.6	77	129		7.8	29.3	41											
	m	m	m		d	d	d											
	100%	100%	100%		100%	100%	100%											
May92	15.6	68	284		10.7	30.6	68											
	m	m	m		d	d	d											
	100%	100%	100%		100%	80%	93%											
Jun92	16.9	74	225		4.7	20.4	58											
	m	m	m		d	d	d											
	100%	100%	100%		100%	90%	100%											
Jul92	17.9	75	212		4.6	22.7	45											
	m	m	m		d	d	d											
	100%	100%	100%		100%	48%	45%											
Aug92	18.0	77	161		4.7	21.4	45											
	m	m	m		d	d	d											
	77%	54%	61%		77%	54%	61%											
Mean	10.4	80	1533		8.1	32.5	38	5.33	1.45	.36	1.94	25.2	1.31	1.12	.18	.13	.13	
	m	m	m		d	d	d	m	m	m	m	m	m	m	m	m	m	m
	98%	83%	78%		98%	83%	78%											

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (20) Wijnandsrade, Netherlands

Date	C L I M A T E		G A S E S		mm	P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N		
	Temp C	Rh %	S02 ug/m3	NO2 ug/m3		PH	S04-S mg/l	NO3-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l
Sep91	16.0	76. m	6.5	26.3	31.4	6.22	2.27	1.05	1.87	44.8	3.15	1.02	.60	.36
			100%	90%	100%	100%	98%	98%	98%	98%	98%	98%	98%	98%
Oct91	10.1	87. m	10.7	34.3	48.0	5.54	1.12	.32	1.57	20.4	.62	1.06	.56	.29
			100%	100%		m	m	m	m	m	m	m	m	m
Nov91	5.3	93. m	9.3	27.8	75.8	4.60	1.04	.32	.84	23.6	.52	.49	.16	.06
			100%	96%		m	m	m	m	m	m	m	m	m
Dec91	3.0	89. m	18.0	34.5	80.0	4.88	1.08	.28	1.83	23.2	.73	1.05	.24	.12
			100%	96%		m	m	m	m	m	m	m	m	m
Jan92	2.0	91. m	23.6	49.5										
			d	*d										
			100%	70%										
Feb92	4.5	88. m	17.7	38.8										
			d	d										
			100%	100%										
Mar92	6.8	84. m	9.4	25.4										
			d	d										
			96%	96%										
Apr92	8.8	78. m	9.8	27.0										
			d	d										
			100%	100%										
May92	15.3	67. m	9.1	26.3										
			d	d										
			100%	100%										
Jun92	16.6	76. m	7.2	25.3										
			d	d										
			100%	100%										
Jul92	18.7	78. m	6.0	21.5										
			d	d										
			100%	100%										
Aug92	18.5	82. m	4.6	18.6										
			d	d										
			100%	100%										
Mean	10.5	82. m	11.0	29.1		4.88	1.23	.40	1.46	25.6	.96	.87	.33	.17
			99%	95%		m	m	m	m	m	m	m	m	m

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (21) Oslo, Norway

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N				P R E C . - O P T I O N						
	Temp C	Rh %	Tow hours	S02 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	12.6 70.0	70.0	258.0	3.5 100%	45.2 100%	d	81.8 100%	4.59 100%	.96 100%	.47 100%	.78 100%	23.1 100%	.30 100%	.42 100%	.71 100%	.13 100%	.15 100%
Oct91	7.7 44.1	79.0	441.0	6.5 100%	37.6 100%	d	96.7 100%	4.58 99%	.87 99%	.43 99%	2.25 99%	26.8 100%	.25 99%	1.10 99%	.58 99%	.18 99%	.09 99%
Nov91	4.0 40.8	85.0	441.0	6.6 100%	45.1 100%	d	55.3 100%	4.90 100%	1.04 100%	.52 100%	2.40 100%	24.2 100%	.32 100%	1.24 100%	.97 100%	.19 100%	.10 100%
Dec91	-.7 33.7	81.0	160.0	11.6 83%	50.5 61%	d	15.4 100%	5.44 100%	3.86 100%	.86 100%	4.50 100%	58.7 100%	1.03 100%	2.61 100%	4.93 100%	.53 100%	.52 100%
Jan92	1.5 27.7	77.0	219.0	12.8 100%	62.6 100%	d	9.8 100%	5.95 97%	3.64 97%	.36 97%	5.60 97%	69.9 100%	.55 97%	3.55 97%	5.86 97%	.34 97%	.26 97%
Feb92	1.5 27.7	77.0	288.0	11.0 100%	57.4 100%	d	21.6 100%	4.41 100%	3.56 100%	1.60 100%	4.83 100%	73.8 100%	1.39 100%	2.87 100%	3.80 100%	.36 100%	.25 100%
Mar92	2.5 76.6	76.0	370.0	7.2 100%	47.0 100%	d	38.4 100%	5.04 100%	2.75 100%	1.38 100%	2.43 100%	51.5 100%	1.91 100%	1.11 100%	3.71 100%	.33 100%	.33 100%
Apr92	5.5 100%	74.0	309.0	4.3 100%	45.9 96%	d	56.1 100%	4.85 100%	.87 100%	.58 100%	.66 100%	20.9 100%	.32 100%	.35 100%	1.48 100%	.10 100%	.05 100%
May92	15.0 100%	67.0	155.0	5.8 87%	50.8 100%	d	11.5 100%	5.99 100%	.69 100%	.74 100%	.74 100%	12.4 100%	.10 100%	.45 100%	1.49 100%	.11 100%	.06 100%
Jun92	20.2 93%	53.0	67.0	2.9 96%	41.6 100%	d	32.7 100%	5.70 100%	1.27 100%	.14 100%	.82 100%	22.2 100%	.11 100%	.54 100%	2.90 100%	.24 100%	.51 100%
Jul92	17.2 100%	55.0	177.0	4.3 96%	33.6 80%	d	95.1 100%	4.41 100%	1.11 100%	.24 100%	.73 100%	24.6 100%	.10 100%	.48 100%	.68 100%	.11 100%	.07 100%
Aug92	15.2 93%	68.0	277.0	2.5 96%	47.1 96%	d	99.6 100%	4.60 100%	.61 100%	.14 100%	.66 100%	15.9 100%	.01 100%	.44 100%	.34 100%	.07 100%	.06 100%
Mean	9.5 97%	72.0	3169.0	6.6 96%	47.1 94%	d	614.0 m	4.65 m	1.24 m	.48 m	1.54 m	27.6 m	.37 m	.85 m	1.33 m	.17 m	.14 m

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (22) Borregaard, Norway

Date	CLIMATE		GASES		mm	PRECIPITATION			PRECIPITATION						
	Temp C	Rh %	S02 ug/m3	N02 ug/m3		pH	S04-S mg/l	N03-N mg/l	CL mg/l	Cond us/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	13.0	70	34.4	17.7	89.8	4.16	1.73	.67	2.32	48.7	.77	1.20	.43	.20	.15
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct91	7.9	79	25.6	18.0	129.8	4.31	1.73	.59	4.78	48.7	.81	2.18	.40	.30	.16
	d	d	d	xd	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	41%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov91	2.5	84	36.7	18.5	71.3	4.05	2.51	.72	9.35	79.5	1.31	3.91	.61	.44	.35
	d	*d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	70%	100%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Dec91	1.6	78	26.7	22.1	37.3	3.95	2.07	.79	10.38	100.6	1.29	4.38	1.01	.60	.30
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	96%	100%	100%	97%	97%	97%	100%	97%	97%	97%	97%	97%
Jan92	.6	76	33.6	26.1	9.6	3.98	4.59	1.72	13.15	127.8	1.94	5.52	3.44	.64	.89
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	77%	77%	100%	100%	100%	100%	90%	90%	90%	100%	90%	90%	90%	90%	90%
Feb92	1.3	76	43.6	25.4	19.8	3.81	5.13	1.79	8.35	133.1	4.38	2.33	1.45	.28	.34
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar92	2.9	70	35.9	16.5	53.0	4.02	3.14	1.05	3.57	75.8	2.18	1.42	.75	.19	.16
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr92	2.5	70	20.7	10.9	.0										
	d	d	d	d	w										
	86%	86%	100%	100%											
May92	12.7	57	27.3	13.7	16.6	4.25	1.81	.40	2.84	44.5	.94	1.10	.40	.14	.14
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	87%	87%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jun92	17.9	60	22.5	10.8	24.3	4.42	2.22	.50	.70	42.5	.72	.49	.78	.12	.19
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	98%	97%	97%	97%	100%	97%	97%	97%	97%	97%
Jul92	15.5	70	31.1	9.9	82.8	4.36	1.92	.64	2.72	45.0	1.12	1.24	.47	.16	.27
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug92	11.8	82	35.9	11.2	139.3	4.29	1.26	.41	2.04	36.9	.64	.95	.27	.13	.15
	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	7.8	73	31.1	16.6	673.6	4.18	2.03	.67	4.36	57.4	1.12	1.89	.56	.25	.21
	d	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	92%	93%	99%	93%											

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (23) Birkenes, Norway

Date	CLIMATE		GASES		mm	PRECIPITATION			PRECIPITATION			PRECIPITATION			
	Temp C	Rh %	S02 ug/m3	N02 ug/m3		pH	S04-S mg/L	NO3-N mg/L	Cl mg/L	Cond uS/cm	NH4-N mg/L	Na mg/L	Ca mg/L	Mg mg/L	K mg/L
Sep91	11.78	418	.6	.9	165.2	4.58	.56	.39	1.48	21.6	.43	.85	.07	.11	.06
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Oct91	5.285	478	1.0	.5	32	4.23	.99	.58	3.41	39.7	.35	1.76	.12	.22	.10
	d	d	d	d	xd	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	45%	99%	98%	98%	98%	99%	98%	98%	98%	98%	98%
Nov91	3.287	495	.9	4.6	42	4.39	.77	.58	3.74	39.5	.42	2.02	.10	.25	.11
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Dec91	1.184	317	.5	1.6	43	4.34	.68	.43	3.60	34.9	.22	2.08	.09	.24	.12
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	96%	96%	96%	99%	96%	96%	96%	96%	96%
Jan92	1.082	254	.4	2.0	50	4.72	.43	.17	3.94	24.3	.08	2.18	.12	.25	.11
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	98%	94%	94%	94%	98%	94%	94%	94%	94%	94%
Feb92	1.681	313	.8	3.5	59	4.29	.77	.58	1.23	34.5	.54	.61	.06	.07	.05
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	82%	82%	100%	100%	98%	95%	95%	95%	99%	95%	95%	95%	95%	95%
Mar92	2.579	406	1.1	3.3	63	4.37	.91	.58	1.32	31.1	.70	.67	.10	.08	.07
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	97%	97%	97%	100%	97%	97%	97%	97%	97%
Apr92	3.876	284	1.3	2.1	74	4.38	.87	.62	1.38	29.5	.63	.76	.11	.09	.08
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	98%	98%	98%	99%	98%	98%	98%	98%	98%
May92	1.568	273	1.4	.4	89	4.33	.66	.40	.81	26.6	.21	.48	.03	.05	.02
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	80%	99%	95%	95%	95%	99%	95%	95%	95%	95%	95%
Jun92	6.759	142	.9	1.8	100	4.12	3.86	1.14	.75	63.1	2.09	.41	1.77	.27	.55
	d	d	d	d	d	d	d	xd	xd	d	xd	xd	xd	xd	xd
	100%	96%	96%	100%	100%	90%	60%	60%	60%	100%	60%	60%	60%	60%	60%
Jul92	4.961	279	.7	.9	66	4.13	1.35	.82	.55	41.2	.62	.25	.08	.02	.02
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	98%	98%	98%	99%	98%	98%	98%	98%	98%
Aug92	3.077	454	.5	.7	55	4.39	.77	.45	1.20	27.1	.37	.81	.14	.08	.08
	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Mean	7.177	4122	.8	1.8	64	4.35	.83	.54	2.07	32.5	.45	1.15	.10	.14	.08
	d	d	d	d	m	d	d	d	d	d	d	d	d	d	d
	100%	98%	98%	100%	100%	99%	98%	98%	98%	99%	98%	98%	98%	98%	98%

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (24) Stockholm South, Sweden

Date	CLIMATE		GASES		PRECIPITATION		PRECIPITATION		PRECIPITATION		PRECIPITATION		PRECIPITATION			
	Temp C	Rh %	S02 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	12.0 d 100%100%	69. m	4.6 d 93%	30.8 d 80%	40. d 100%	47.0 m	4.45 m	.86 m	.41 m	.42 m	26.0 m	.37 m	.22 m	.15 m	.04 m	.02 m
Oct91	7.5 d 100%100%	81. m	6.2 d 100%	35.8 d 100%	27. d 100%	29.0 m	4.45 m	.76 m	.54 m	.40 m	37.0 m		.21 m	.20 m	.04 m	.02 m
Nov91	4.7 d 100%100%	85. m	8.5 d 96%	27.7 d 100%	24. d 100%	49.0 m	4.53 m	.78 m	.43 m	.91 m		27.00 m	.55 m	.28 m	.07 m	.05 m
Dec91	2.1 d 100%100%	80. m	7.5 d 100%	28.6 d 100%	19. d 61%	26.0 m	4.38 m	.75 m	.40 m	1.00 m	25.0 m	.26 m	.70 m	.17 m	.08 m	.06 m
Jan92	2.1 d 100%100%	71. m	8.2 d 93%	30.5 d 90%		18.0 m	4.69 m	.72 m	.34 m	1.10 m	25.0 m	.26 m	.61 m	.20 m	.09 m	.04 m
Feb92	1.5 d 100%100%	79. m	8.0 d 100%	31.2 d 100%		21.0 m	4.46 m	.68 m	.51 m	.82 m	29.0 m	.36 m	.41 m	.22 m	.06 m	.03 m
Mar92	3.4 d 100%100%	74. m	10.1 d 74%	28.3 d 100%	39. d 48%	24.0 m	4.35 m	.82 m	.53 m	.59 m	30.0 m		.39 m	.28 m	.06 m	.03 m
Apr92	4.1 d 100%100%	72. m	5.4 d 100%	26.3 d 93%	57. d 100%	55.0 m	4.76 m	.88 m	.42 m	.37 m	25.0 m	.54 m	.18 m	.13 m	.04 m	.04 m
May92	14.2 d 100%100%	51. m	3.5 d 100%	25.1 d 77%	68. d 100%	11.0 m	4.41 m	.83 m	.42 m	.59 m	26.0 m	.37 m	.35 m	.27 m	.07 m	.08 m
Jun92	18.5 d 100%100%	51. m	3.1 d 96%	22.1 d 100%	64. d 100%	11.0 m	4.56 m	.80 m	.35 m	.32 m	21.0 m	.20 m	.10 m	.36 m	.05 m	.04 m
Jul92	18.3 d 90%100%	60. m	1.8 d 93%		57. d 100%	118.0 m	4.89 m				24.0 m	.35 m	.08 m	.11 m	.02 m	.02 m
Aug92	15.9 d 90%100%	71. m	2.4 d 100%	22.9 d 77%	46. d 100%	87.0 m	4.55 m	.78 m	.34 m	.22 m	24.0 m	.41 m	.12 m	.18 m	.03 m	.02 m
Mean	8.6 d 98%100%	70. m	5.7 d 95%	28.1 m *	45. m *	496.0 m	4.58 m	.80 m	.42 m	.54 m	25.8 m	3.32 m	.25 m	.18 m	.04 m	.03 m

ECE--PROGRAMME ON EFFECTS ON MATERIALS SITE: (25) Stockholm Centre, Sweden

Date	C L I M A T E		G A S E S			P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N					
	Temp C	Rh %	Sun hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	CL mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Hg mg/l	K mg/l
Sep91	12.0	69.	214.	2.3	20.9		47.0	4.45	.86	.41	.42	26.0	.37	.22	.15	.04	.02
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%															
Oct91	7.5	81.	471.	3.7	31.7		29.0	4.45	.76	.54	.40	37.0		.21	.20	.04	.02
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%															
Nov91	4.7	85.	511.	4.2	27.2		49.0	4.53	.78	.43	.91		27.00	.55	.28	.07	.05
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%														
Dec91	2.1	80.	331.	6.5			26.0	4.38	.75	.40	1.00	25.0	.26	.70	.17	.08	.06
	d	d	m	m			m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%														
Jan92	2.1	71.	129.	6.0			18.0	4.69	.72	.34	1.10	25.0	.26	.61	.20	.09	.04
	d	d	m	m			m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%														
Feb92	1.5	79.	241.	4.1			21.0	4.46	.68	.51	.82	29.0	.36	.41	.22	.06	.03
	d	d	m	m			m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%														
Mar92	3.4	74.	292.	5.2			24.0	4.35	.82	.53	.59	30.0		.39	.28	.06	.03
	d	d	m	m			m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%														
Apr92	4.1	72.	297.	3.0			55.0	4.76	.88	.42	.37	25.0	.54	.18	.13	.04	.04
	d	d	m	m			m	m	m	m	m	m	m	m	m	m	m
	100%	100%															
May92	14.2	51.	33.	3.3			11.0	4.41	.83	.42	.59	26.0	.37	.35	.27	.07	.08
	d	d	m	m			m	m	m	m	m	m	m	m	m	m	m
	100%	100%															
Jun92	18.5	51.	51.	3.2	24.2		11.0	4.56	.80	.35	.32	21.0	.20	.10	.36	.05	.04
	d	d	m	m	m		m	m	m	m	m	m	m	m	m	m	m
	100%	100%															
Jul92	18.3	60.	132.	2.4	22.4		118.0	4.89				24.0	.35	.08	.11	.02	.02
	d	d	m	m	m		m	m				m	m	m	m	m	m
	90%	100%															
Aug92	15.9	71.	243.	3.1	25.6		87.0	4.55	.78	.34	.22	24.0	.41	.12	.18	.03	.02
	d	d	m	m	m		m	m	m	m	m	m	m	m	m	m	m
	90%	100%															
Mean	8.6	70.	2945.	3.9	25.3		496.0	4.58	.80	.42	.54	25.8	3.32	.25	.18	.04	.03
	d	d	m	m	*m		m	m	m	m	m	m	m	m	m	m	m
	98%	100%															

ECC-PROGRAMME ON EFFECTS ON MATERIALS SITE: (26) Aspvierten, Sweden

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N		P R E C . - O P T I O N		NH ₄ -N mg/l	Cond us/cm	Cl ₁ mg/l	Ca mg/l	Mg mg/l	K mg/l				
	Temp C	Rh %	Tow hours	Sun hours	S02 ug/m3	N02 ug/m3	O3 ug/m3	mm							pH	SO ₄ -S mg/l	NO ₃ -N mg/l	Na mg/l
Sep91	11.0	75.	304.	209.	1.7	d	53.	45.9	4.58	.72	.36	.48	20.3	.30	.14	.06	.30	
	m	m	m	m	100%	d	100%	100%	100%	d	d	d	d	d	d	d	d	d
														98%	93%	93%	93%	93%
Oct91	6.7	85.	511.	85.	1.1	d	43.	9.8	4.61	.61	.46	.76	19.7	.35	.22	.08	.12	
	m	m	m	m	100%	d	100%	100%	98%	d	d	d	d	d	d	d	d	d
														96%	81%	81%	81%	81%
Nov91	2.9	90.	496.	31.	2.5	d	36.	33.1	4.50	.76	.54	1.69	28.3	.79	.14	.12	.18	
	m	m	m	m	100%	d	96%	100%	97%	d	d	d	d	d	d	d	d	d
														96%	97%	97%	97%	97%
Dec91	.3	86.	323.	40.	2.4	d	42.	30.8	4.34	.66	.47	1.17	25.7	.20	.09	.08	.08	
	m	m	m	m	100%	d	96%	100%	100%	d	d	d	d	d	d	d	d	d
														99%	96%	96%	96%	96%
Jan92	.5	78.	177.	68.	2.2	d	49.	22.9	4.53	.41	.31	.89	19.2	.15	.41	.04	.05	
	m	m	m	m	100%	d	100%	100%	99%	d	d	d	d	d	d	d	d	d
														98%	98%	98%	98%	98%
Feb92	.1	84.	221.	63.	2.4	d	52.	30.9	4.49	.41	.38	.30	14.6	.20	.09	.04	.03	
	m	m	m	m	100%	d	62%	100%	100%	d	d	d	*d	d	d	d	d	d
													66%	99%	100%	100%	100%	100%
Mar92	1.6	82.	353.	103.	3.3	d	57.	26.6	4.38	.68	.61	1.32	25.5	.30	.76	.14	.12	
	m	m	m	m	100%	d	87%	100%	99%	d	d	d	d	d	d	d	d	d
														96%	99%	99%	99%	99%
Apr92	2.6	77.	276.	127.	1.4	d	74.	84.5	4.35	1.18	.67	.57	27.8	.94	.22	.11	.05	
	m	m	m	m	100%	d	80%	100%	100%	d	d	d	d	d	d	d	d	d
														99%	99%	99%	99%	99%
May92	12.1	60.	114.	351.	1.5	d	87.	11.5	4.64	.54	.29	.36	10.2	.26	.16	.16	.05	
	m	m	m	m	100%	d	83%	100%	100%	d	d	d	d	d	d	d	d	d
														99%	96%	96%	96%	96%
Jun92	16.3	62.	136.	328.	1.2	d	77.	16.6	4.87	.57	.26	.18	11.9	.43	.07	.17	.04	
	m	m	m	m	100%	d	83%	100%	100%	d	d	d	d	d	d	d	d	d
														100%	100%	100%	100%	100%
Jul92	16.7	67.	193.	260.	.9	d	70.	53.8	4.38	.81	.34	.36	23.0	.33	.15	.10	.03	
	m	m	m	m	100%	d	100%	100%	100%	d	d	d	d	d	d	d	d	d
														99%	99%	99%	99%	99%
Aug92	15.6	78.	334.	172.	1.2	d	64.	46.2	4.48	.79	.44	.40	19.5	.47	.23	.16	.04	
	m	m	m	m	100%	d	96%	100%	99%	d	d	d	d	d	d	d	d	d
														99%	99%	99%	99%	99%
Mean	7.2	77.	3438.	1837.	1.8	d	58.	412.6	4.45	.78	.46	.68	22.6	.48	.33	.12	.06	
	m	m	m	m	100%	d	89%	100%	99%	d	d	d	d	d	d	d	d	d
														98%	97%	97%	97%	97%

ECE-PROGRAMME ON EFFECTS ON MATERIALS										SITE: (27) Lincoln Cathedral, United Kingdom									
Date	C L I M A T E		G A S E S		mm	P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N							
	Temp C	Rh %	Tow hours	Sun hours		S02 ug/m3	N02 ug/m3	O3 ug/m3	pH	S04-S mg/l	N03-N mg/l	Cl uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l		
Sep91	15.2	74	338	m	20.2	17.7		50.3	4.53	1.05	.63	1.70	30.9	.45	.62	.99	.12	.18	
	d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Oct91	10.6	87	521	m	17.5	23.5		24.0	5.32	1.12	.38	2.41	27.9	.43	1.07	1.38	.16	.31	
	d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Nov91	6.4	94	641	m	17.3	39.9		46.2	4.72	1.23	.32	3.28	32.2	.29	1.38	1.58	.32	.12	
	d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%			100%			100%	100%	100%	100%	100%	100%	99%	99%	100%	100%	99%	
Dec91	4.6	95	714	m	27.6	39.1		17.4	4.36	1.07	.17	4.26	38.5	.35	1.32	.83	.24	.14	
	d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%			93%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Jan92	3.8	95	707	m	32.9	67.9		31.9	4.09	1.24	.28	4.15	51.1	.26	2.90	.86	.22	.92	
	*d	*d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	74%	74%			80%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Feb92	5.8	93	571	m	37.4	52.1		12.2	4.68	1.59	.58	5.16	73.5	.91	1.37	1.24	.20	.26	
	d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%			100%			100%	100%	94%	94%	94%	94%	94%	94%	94%	94%	94%	
Mar92	7.6	91	519	m	21.8	31.7		50.0	4.87	1.69	.49	4.59	45.4	.79	1.74	1.26	.32	.23	
	*d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	51%	100%			100%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	
Apr92	8.6	86	418	m	16.8	18.9		14.9	4.53	2.76	.71	6.65	58.3	1.03	4.27	2.36	.55	.44	
	d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%				100%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	
May92	19.3	83	402	m	18.2	15.4		22.7	4.88	2.03	.79	2.49	64.0	1.12	.83	1.73	.20	.39	
	*d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	61%	100%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Jun92	19.7	67	331	m	10.1	10.7		20.8	4.78	2.82	1.48	3.28	74.4	1.49	.99	1.64	.23	1.45	
	x	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	43%	43%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Jul92	18.9	74	350	m	17.8	22.7		65.2	4.08	1.25	.53	4.26	72.2	1.30	.56	.58	.47	.54	
	*d	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Aug92	19.0	72	327	m	10.8	19.6		48.5	5.12	1.61	.59	1.66	26.5	.64	.65	1.26	.15	.73	
	x	d			d	w		d	d	d	d	d	d	d	d	d	d	d	
	32%	32%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Mean	1.0	86	5839	m	20.4	29.9		404.1	4.47	1.50	.55	3.40	45.6	.74	1.29	1.20	.27	.46	
	*d	d			d	m		d	d	d	d	d	d	d	d	d	d	d	
	71%	87%			97%			100%	99%	99%	99%	99%	94%	99%	99%	99%	99%	99%	

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (28) Wells Cathedral, United Kingdom

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N		P R E C . - O P T I O N		K						
	Temp C	Rh %	S02 ug/m3	N02 ug/m3	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond us/cm		NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l		
Sep91	19.7	83.	4.3	16.0	44.1	6.48	1.55	.87	4.19	58.7	1.77	3.87	1.42	.28	1.37
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	90%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	100%
Oct91	12.3	93.	3.1	24.3	39.9	6.29	1.79	.31	6.37	82.2	2.61	7.32	1.22	.42	5.10
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov91	8.3	97.	4.3	20.2											
	xd	xd	d	w											
	40%	40%	100%												
Dec91	7.2	97.	8.1	42.2	.1	6.50				435.0					
	*d	*d	d	w	d	d				d					
	64%	64%	100%		100%	100%				100%					
Jan92	5.1	95.	22.0	32.3	5.3	6.23	4.02	.05	13.07	189.3	17.57	15.14	1.46	.96	1.44
	*d	*d	d	w	d	d	d	d	d	d	d	d	d	d	d
	74%	74%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb92	6.6	96.	8.5	27.2	15.2	6.65	1.96	.26	2.76	152.1	4.56	2.12	.66	.30	.29
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	98%	98%	100%
Mar92	8.1	91.	6.6	17.3	15.7	6.30	3.32	.72	6.36	71.1	3.20	5.81	1.67	.52	2.62
	xd	xd	d	w	w	w	w	w	w	w	w	w	w	w	w
	48%	48%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr92	10.5	87.	4.8	16.5	26.9	6.06	1.22	.35	3.15	44.6	1.84	2.64	1.78	.37	.44
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	99%	99%	99%	99%	99%	99%	99%	98%	98%	99%
May92	17.8	75.	4.4	20.0	41.4	6.38	.75	.39	1.60	41.7	2.11	2.55	1.19	.27	.27
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	87%	87%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jun92	20.5	72.	5.4	17.3	30.9	5.48	1.71	.74	1.04	45.7	2.43	.75	1.60	.31	.29
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	93%	93%	100%		100%	100%	100%	100%	100%	100%	100%	100%	99%	99%	100%
Jul92	18.5	90.	3.7	20.5	40.2	5.80	1.87	.62	1.77	38.5	1.86	1.46	1.61	.25	.71
	d	d	d	w	d	d	d	d	d	d	d	d	d	d	d
	87%	87%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug92	14.3	93.	1.4	12.0	92.2	6.43	2.04	1.08	4.60	49.4	2.76	4.41	1.39	.40	1.15
	xd	xd	d	w	d	d	d	d	d	d	d	d	d	d	d
	16%	16%	100%		100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Mean	12.9	88.	6.4	22.1	6.08	1.77	.68	3.78	59.1	2.66	3.78	1.41	.35	1.37	
	*d	*d	d	m	m	m	m	m	m	m	m	m	m	m	m
	74%	74%	99%												

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (29) Chatteringshaws Loch, United Kingdom

C L I M A T E G A S E S P R E C I P I T A T I O N P R E C . - O P T I O N
 Temp Rh Tow Sun SO2 NO2 O3 mm pH SO4-S NO3-N Cl Cond NH4-N Na Ca Mg K
 C % hours hours ug/m3 ug/m3 ug/m3 mg/l mg/l mg/l uS/cm mg/l mg/l mg/l mg/l mg/l mg/l

Date	Sep91	Oct91	Nov91	Dec91	Jan92	Feb92	Mar92	Apr92	May92	Jun92	Jul92	Aug92
Temp C												
Rh %												
Tow hours												
Sun hours												
SO2 ug/m3												
NO2 ug/m3												
O3 ug/m3												
SO4-S mg/l												
NO3-N mg/l												
Cl mg/l												
Cond uS/cm												
NH4-N mg/l												
Na mg/l												
Ca mg/l												
Mg mg/l												
K mg/l												
Mean												

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (30) Stoke Orchard, United Kingdom

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N			P R E C I P I T A T I O N									
	Temp C	Rh %	Tow hours	Sun hours	S02 ug/m3	N02 ug/m3	O3 ug/m3	mm	pH	S04-S mg/l	N03-N mg/l	Cl mg/l	Cond us/cm	NH4-N mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	34.8	d	100%	7.7	27.4	w	53.2	4.50	.76	.68	1.34	1.57	.46	.35	.02	.40	
Oct91	476	d	100%	4.6	27.5	w	18.9	5.26	2.70	.70	2.58	1.46	2.01	2.19	.15	.21	
Nov91	554	d	100%	5.1	40.3	w	43.1	4.53	.89	.40	3.47	.65	1.65	.09	.13	.51	
Dec91	422	d	100%	8.3	27.0	w	13.6	4.77	2.17	.54	2.40	1.77	1.10	3.70	.10	.20	
Jan92	389	d	100%	27.4	22.7	w	79.2	4.85	1.00	.48	1.94	.56	.84	3.81	.10	.19	
Feb92	310	d	96%	10.9	32.6	w	9.1	6.08	1.73	.79	5.80	.85	2.20	.00	.20	.00	
Mar92	194	d	100%	4.8	26.6	w	33.1	5.43	1.21	.38	2.55	.55	1.31	.23	.09	.10	
Apr92	186	d	100%	7.7	24.1	w	54.4	4.91	1.02	.32	3.11	.52	1.77	.59	.18	.33	
May92	197	d	83%	10.3	18.1	w	73.3	5.34	1.02	.61	.80	.70	.63	.79	.08	.32	
Jun92	247	d	93%	5.0	16.7	w	18.7	3.79	5.07	2.05	2.18	1.51	1.01	1.68	.40	.87	
Jul92	371	d	100%	8.0	15.8	w	108.9	4.51	1.13	.29	1.05	.43	.88	1.08	.07	.34	
Aug92	246	d	100%	4.8	22.0	w	83.4	4.91	.80	.01	1.69	.00	1.26	1.39	.17	.13	
Mean	3968	d	97%	8.7	25.1	m	588.9	4.66	1.20	.45	1.90	.66	1.09	1.32	.12	.30	

ECE--PROGRAMME ON EFFECTS ON MATERIALS SITE: (31) Madrid, Spain

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C . - O P T I O N								
	Temp C	Rh %	Tow Sun hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l	
Sep91	22.1	53	76	4.4	25.5		21.2	6.64	1.70	.62	.69	34.4	.15	.49	2.63	.30	.21	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct91	11.9	61	217	4.1	17.6		68.0	6.43	.75	.16	.33	16.3	.18	.32	.70	.07	.03	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov91	8.4	65	201	9.3	28.6		14.5	6.55	1.67	.35	.50	19.4	.32	.42	1.00	.13	.05	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Dec91	6.5	73	299	14.9	24.0		11.0	5.91	2.25	.55	1.33	25.6	.40	1.00	1.56	.18	.10	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jan92	3.4	71	119	16.0	26.1		4.0	6.24	2.69	.41	.87	30.6	1.21	.99	1.18	.19	.45	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	95%	95%	95%	95%	95%	95%
Feb92	5.8	64	119	18.2	34.4		17.6	5.71	1.37	.45	.38	27.8	.41	.28	.85	.11	.08	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	97%	97%	97%	97%	97%	97%
Mar92	9.7	55	69	9.2	16.7		7.3	7.76	1.78	.28	1.55	20.7	.41	.68	1.21	.19	.30	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	96%	96%	96%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr92	12.5	54	87	6.0	13.0		25.6	7.35	1.05	.14	.58	24.2	.23	.42	.62	.09	.06	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	98%	100%	100%	100%	100%	100%
May92	18.0	52	86	3.2	21.8		41.3	6.61	1.31	.43	.38	17.0	.45	.30	1.16	.10	.13	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	96%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jun92	16.9	58	126	3.9	27.5		61.4	6.98	1.28	.25	.61	33.6	.66	.48	2.60	.13	.05	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jul92	25.3	48	8	5.3	21.4		9.9	6.76	2.67	1.14	.50	50.3	1.95	.60	3.10	.29	.47	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug92	24.1	53	38	8.7	7.0		25.9	7.17	1.61	.80	.54	38.9	.95	.42	2.43	.22	.16	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	13.8	59	144.7	8.6	21.9		309.8	6.46	1.34	.37	.54	26.2	.48	.43	1.57	.14	.10	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d
	99%	99%	99%	100%	99%		100%	100%	100%	100%	100%	100%	99%	99%	99%	99%	99%	99%

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (32) Bilbao, Spain

Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C . - O P T I O N								
	Temp C	Rh %	Tow Sun hours	SO2 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l	
Sep91	21.1	75.	435.	11.5	57.2		118.4	5.86	6.43	2.09	5.47	43.0	.83	2.11	4.18			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Oct91	13.8	71.	378.	7.1	35.6		96.4	6.13	6.35	1.53	6.38	42.2	1.75	2.58	3.48			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Nov91	11.9	72.	313.	5.4	27.5		146.6	4.58	5.72	1.41	9.00	52.3	1.72	4.48	2.09			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	96%	96%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Dec91	9.2	68.	261.	6.1	27.0		13.0	7.23	23.89	6.02	10.00	145.8	2.87	4.96	19.41			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	96%	96%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Jan92	7.1	83.	552.	11.3	30.2		30.3	6.30	10.79	5.71	8.94	70.4	2.54	3.25	6.29			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	96%	96%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Feb92	9.5	80.	409.	5.8	25.2		33.9	6.98	12.56	2.89	4.95	69.6	1.12	1.75	9.80			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Mar92	10.8	87.	636.	8.3	25.1		121.3	5.71	11.00	4.10	14.99	85.7	1.06	7.46	5.59			
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	96%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Apr92	11.6		150.	4.9	32.2		63.8	6.29	12.54	3.80	11.76	79.3	2.07	4.96	5.94			
	d		d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	86%		90%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
May92	17.3		232.	10.9	42.9		45.9	6.15	12.95	3.43	8.38	75.1	2.31	2.13	8.31			
	d		d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	87%		100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Jun92	15.9	80.	451.	4.9	26.1		171.1	4.92	4.66	1.64	2.81	28.9	1.02	.55	2.37	.16	.06	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	86%	86%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Jul92	20.4	80.	493.	5.1	38.5		59.2	4.26	11.36	5.35	7.48	81.4	2.65	2.16	4.27	.46	.35	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Aug92	21.3	78.	413.	3.6	26.3		132.0	6.38	18.00	7.17	10.39	104.4	3.49	1.67	11.97	.69	.50	
	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d	
	100%	100%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Mean	14.2	77.	1629.	7.1	32.8		1031.9	5.02	9.54	3.29	8.14	63.6	1.77	3.04	5.42	.40	.27	
	d	m	d	d	d		d	d	d	d	d	d	d	d	d	d	xm	
	97%		99%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (33) Toledo, Spain

Date	CLIMATE		GASES		mm	PRECIPITATION		Cond uS/cm	PREC. - OPTION							
	Temp C	Rh %	Sun hours	S02 ug/m3		N02 ug/m3	O3 ug/m3		pH	S04-S mg/L	N03-N mg/L	CL mg/L	NH4-N mg/L	Na mg/L	Ca mg/L	Mg mg/L
Sep91	21.9 d	51. d	49. d	16.6 d	11.6 d	53.6 d	6.36 d	1.18 d	.44 d	.85 d	24.2 d	.43 d	.60 d	1.31 d	.15 d	.24 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct91	11.5 d	69. d	266. d	3.6 d	8.7 d	90.3 d	6.21 d	.54 d	.11 d	.41 d	8.7 d	.04 d	.28 d	.38 d	.05 d	.02 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov91	8.5 d	63. d	109. d	3.7 d	11.0 d	30.4 d	6.56 d	.60 d	.20 d	.58 d	11.3 d	.13 d	.53 d	.27 d	.06 d	.15 d
	100%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Dec91	6.7 d	69. d	297. d	3.2 d	22.2 d	36.2 d	6.95 d	.45 d	.24 d	.40 d	9.2 d	.50 d	.27 d	.16 d	.03 d	.03 d
	100%	96%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jan92	3.4 d	72. d	141. d	3.2 d	6.1 d	3.4 d	6.71 d	1.11 d	.43 d	1.05 d	15.9 d	.42 d	1.62 d	.82 d	.13 d	.72 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	94%	94%	94%	94%	94%
Feb92	6.8 d	62. d	110. d	3.2 d	10.6 d	32.1 d	6.26 d	.51 d	.18 d	.33 d	12.3 d	.30 d	.13 d	.25 d	.04 d	.03 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97%	98%	98%	98%	98%
Mar92	10.0 d	56. d	80. d	2.1 d	23.8 d	28.5 d	6.68 d	.80 d	.20 d	1.04 d	13.4 d	.15 d	.65 d	.57 d	.10 d	.04 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr92	12.9 d	51. d	99. d	2.6 d	18.0 d	69.1 d	6.63 d	.28 d	.07 d	.74 d	7.6 d	.02 d	.40 d	.19 d	.04 d	.03 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May92	17.1 d	53. d	132. d	1.9 d	9.6 d	45.3 d	5.91 d	.78 d	.26 d	.55 d	14.5 d	.29 d	.43 d	.40 d	.07 d	.09 d
	100%	100%	100%	100%	100%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Jun92	15.4 d	60. d	133. d	3.1 d	27.1 d	123.6 d	5.19 d	.60 d	.19 d	.30 d	12.3 d	.44 d	.17 d	.30 d	.03 d	.02 d
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jul92	24.2 d	45. d	0. d	3.9 d	14.7 d	4.6 d	6.22 d	4.71 d	1.77 d	.77 d	58.2 d	3.30 d	.86 d	2.74 d	.37 d	.79 d
	100%	100%	100%	87%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug92	24.7 d	47. d	21. d	10.2 d	15.2 d	22.5 d	7.08 d	1.62 d	.71 d	.55 d	29.3 d	1.11 d	.53 d	1.69 d	.19 d	.21 d
	100%	100%	100%	61%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	13.6 d	58. d	1426. d	4.6 d	14.9 d	539.6 d	5.73 d	.70 d	.23 d	.53 d	13.4 d	.32 d	.36 d	.49 d	.07 d	.08 d
	100%	98%	98%	95%	99%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (34) Moscow, Russia

Date	C L I M A T E		G A S E S		P R E C I P I T A T I O N			P R E C . - O P T I O N									
	Temp C	Rh %	Sun hours	S02 ug/m3	N02 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond US/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	10.0	78.	315.	22.4	41.5		55.7	5.96	2.27	.21	.66	46.5	.39				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Oct91	5.9	82.	329.	10.9	42.5		116.2	5.91	.83	.08	.23	20.2	.12				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Nov91	2.8	84.	379.	3.7	38.2		37.3	6.24	2.18	.16	.66	47.8	.46				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Dec91	-3.0	84.	186.	32.9	13.4		43.7	5.91	2.25	.15	.44	39.2	.36				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Jan92	-2.7	84.	121.	14.9	36.0		43.6	6.06	1.43	.13	.42	36.9	.25				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Feb92	-5.0	79.	76.	14.1	28.9		42.0	5.99	3.32	.32	1.32	57.6	.91				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mar92	3.4	78.	130.	29.7	29.5		47.9	6.26	2.03	.17	.69	47.5	.71				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Apr92	8.0	70.	119.	45.9	51.2		36.2	6.12	1.28	.08	.35	28.8	.54				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
May92	11.0	68.	104.	28.1	46.8		41.8	6.51	1.77	.19	.72	34.9	.41				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Jun92	18.2	52.	53.	36.9	42.9		17.8	6.11	1.72	.10	.44	29.5	.32				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Jul92	18.9	49.	67.	54.8	54.0		16.6	6.67	3.18	.11	.75	28.1	.35				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Aug92	18.7	55.	81.	41.3	39.8		35.6	6.40	2.59	.18	.67	38.9	.55				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m
Mean	7.2	72.	1960.	28.0	38.7		534.4	6.07	1.87	.15	.56	36.7	.41				
	100%	100%		m	m	m	m	m	m	m	m	m	m	m	m	m	m

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (35) Lahemaa, Estonia

Date	CLIMATE		GASES			PRECIPITATION			PRECIPITATION					
	Temp C	Rh %	S02 ug/m3	NO2 ug/m3	O3 ug/m3	pH	SO4-S mg/L	NO3-N mg/L	Cl mg/L	Cond uS/cm	NH4-N mg/L	Ca mg/L	Mg mg/L	K mg/L
Sep91	11.2	80.	390.	163.										
Oct91														
Nov91														
Dec91														
Jan92														
Feb92														
Mar92														
Apr92														
May92														
Jun92														
Jul92														
Aug92														
Mean														

SCE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (36) Lisbon-Jeronimo, Portugal

Date	CLIMATE		GASES		mm	PRECIPITATION		PRECIPITATION		PRECIPITATION		PRECIPITATION	
	Temp C	Rh %	S02 ug/m3	N02 ug/m3		N03 ug/l	SO4-S mg/l	CL mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l
Sep91	23.4	60.	26.0	40.5	28.	47.9	7.00	140.4					
	d	xd	*d	d	d	w	w	w					
	100%	100%	56%	100%	100%	100%	100%	100%					
Oct91	19.7	56.	30.1	47.5	25.	102.0	5.75	32.4	.50	1.03	5.31	.10	.14
	d	xd	d	d	d	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov91	15.6	66.	44.2	39.7	3.	37.5	6.54	73.8	1.39	3.62	6.16	.39	.27
	d	xd	d	d	d	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	100%	100%	94%	94%	94%	94%	94%	94%
Dec91	13.9	64.	92.7	54.2	3.	61.8	5.95	49.0	1.75	.84	2.89	.21	.21
	d	d	d	d	d	w	w	w	w	w	w	w	w
	100%	100%	100%	100%	100%	100%	100%	86%	86%	86%	86%	86%	86%
Jan92	11.7	59.	90.5	50.8	6.	75.6	4.85	63.9					
	d	d	d	d	d	w	w	w					
	100%	100%	100%	100%	100%	100%	100%	100%					
Feb92	13.2	62.	271.7	115.7	19.	21.9	6.11	128.6					
	d	d	xd	*d	xd	w	w	w					
	100%	100%	41%	55%	41%	100%	100%	100%					
Mar92	14.8	61.	5.5	47.1	46.	.0							
	d	d	d	*d	d	w							
	87%	87%	100%	67%	100%								
Apr92	16.2	60.	3.0	78.3	37.	87.6	6.00	98.9					
	d	d	*d	*d	*d	w	w	w					
	90%	86%	70%	70%	70%	100%	100%	100%					
May92	19.6	60.	4.3	22.2	38.	41.7	6.60	104.2					
	d	d	*d	*d	*d	w	w	w					
	100%	100%	58%	58%	58%	100%	100%	100%					
Jun92	19.8	64.	2.9	22.5	35.	25.9	6.49	80.9					
	d	d	d	d	d	w	w	w					
	100%	100%	100%	96%	96%	100%	100%	100%					
Jul92	24.7	56.	18.6	26.7	36.	1.7	7.22						
	d	d	d	d	d	d	d						
	100%	100%	100%	80%	100%	100%	100%						
Aug92	24.2	56.	9.8	26.0	26.								
	d	d	d	*d	d								
	100%	100%	100%	67%	100%								
Mean	18.2	60.	41.1	45.7	25.	5.54			1.05	1.45	4.73	.19	.19
	d	d	d	d	d	m			xm	xm	xm	xm	xm
	98%	97%	85%	83%	89%				76.9	76.9	76.9	76.9	76.9

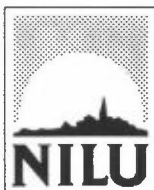
ECC-PROGRAMME ON EFFECTS ON MATERIALS										SITE: (37) Dorset, Canada									
Date	C L I M A T E			G A S E S			P R E C I P I T A T I O N			P R E C. - O P T I O N			NH ₄ -N mg/l	Ca mg/l	Mg mg/l	K mg/l			
	Temp C	Rh %	Tow hours	S0 ₂ ug/m3	N0 ₂ ug/m3	O ₃ ug/m3	mm	pH	SO ₄ -S mg/l	N0 ₃ -N mg/l	CL mg/l	Cond uS/cm					Na mg/l		
Sep91	11.5	76.	378.	1.9		55.	94.0	4.42	.72	.33	.06	20.0	.26	.02	.18				
Oct91	7.7	77.	366.	3.2		57.	133.0	4.39	.77	.43	.15	22.5	.36	.08	.23				
Nov91	2.79		209.	2.0		49.	50.0	4.21	.80	.76	.13	32.5	.52	.05	.12				
Dec91	6.9	80.	101.	3.4		50.	98.0	4.32	.55	.62	.28	26.5	.31	.06	.05				
Jan92	9.9	79.	88.	3.5		56.	54.0	4.50	.33	.35	.44	17.0	.13	.23	.03				
Feb92	8.9	75.	23.	3.2		67.	44.0	4.21	.58	.83	.23	32.0	.35	.09	.08				
Mar92	6.5	69.	141.	2.8		78.	127.0	4.65	.53	.42	.07	20.0	.29	.02	.06				
Apr92	2.7	67.	171.	2.1		73.	28.0	5.54	.13	.12	.06	3.5	.00	.04	.05				
May92	10.9	64.	264.	1.3		83.	63.0	4.41	.92	.57	.10	27.2	.49	.28	.26				
Jun92	13.9	74.	384.	1.0		62.	81.0	4.72	.70	.43	.06	18.5	.48	.01	.24				
Jul92	15.4	80.	448.	.1		47.	109.0	4.30	.77	.40	.08	27.0	.25	.01	.08				
Aug92	14.9	85.	505.	.9		51.	102.0	4.27	.95	.34	.04	27.5	.31	.01	.11				
Mean	3.8	75.	3078.	2.1		61.	983.0	4.40	.69	.46	.13	23.4	.32	.06	.13				

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (38) Research Triangle Park, USA(NC)

Date	C L I M A T E		G A S E S		mm	P R E C I P I T A T I O N			P R E C I P I T A T I O N			P R E C I P I T A T I O N						
	Temp C	Rh %	Sun hours	S02 ug/m3		NO2 ug/m3	NO3-N mg/l	Cl mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l				
Sep91	22.2	61	224	7.1	21.0	70	52.6	4.70	.39	.23	.27	13.1	.22	.17	.03	.03	.02	
Oct91	16.1	50	214	11.1	29.0	59	23.4	4.90	.49	.22	.23	15.0	.27	.12	.14	.03	.03	
Nov91	10.0	37	161	17.1	32.1	31	24.7	4.85	.97	.33	.56	30.0	.37	.29	.11	.05	.04	
Dec91	8.3	33	146	26.3	34.3	20	85.1	4.76	.36	.47	.40	11.1	.44	.25	.07	.04	.03	
Jan92																		
Feb92																		
Mar92																		
Apr92																		
May92																		
Jun92																		
Jul92																		
Aug92																		
Mean	14.2	45		15.4	29.1	45		4.77	.47	.35	.36	14.7	.35	.22	.07	.04	.03	

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (39) Steubenville, USA(Oh)

Date	C L I M A T E		G A S E S			P R E C I P I T A T I O N			P R E C. - O P T I O N								
	Temp C	Rh %	Sun hours	S02 ug/m3	NO2 ug/m3	O3 ug/m3	mm	pH	SO4-S mg/l	NO3-N mg/l	CL mg/l	Cond uS/cm	NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep91	20.0	55.	210.	58.0	35.3	60.	16.5	4.19	1.90	.45	.32	40.3	.60	.04	.31	.05	.03
Oct91	14.4	53.	177.	64.9	42.0	40.	5.1	4.51	1.01	.36	.20	29.2	.75	.06	.22	.07	.01
Nov91	6.1	57.	79.	62.5	36.5	33.	40.6	4.21	2.13	.30	.39	43.1	.23	.02	.37	.11	.03
Dec91	2.8	60.	85.	47.6	34.6	31.	7.3	4.08	1.70	.22	.41	38.2	.44	.07	.40	.13	.02
Jan92																	
Feb92																	
Mar92																	
Apr92																	
May92																	
Jun92																	
Jul92																	
Aug92																	
Mean	10.8	56.		58.2	37.1	41.		4.21	1.95	.33	.36	40.9	.38	.03	.35	.09	.03



Norwegian Institute for Air Research
Norsk institutt for luftforskning (NILU)
P.O. Box 64, N-2001 Lillestrøm - Norway

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ABSTRACT The International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments has an extensive programme on material exposure in well defined environments. This report includes the environmental data from the fifth exposure year of temperature, relative humidity, time of wetness, sunshine hours, concentrations of SO ₂ , NO ₂ , O ₃ , and precipitation amount and quality. The yearly results from the previous years are also reported and the quality of data has been evaluated.			
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