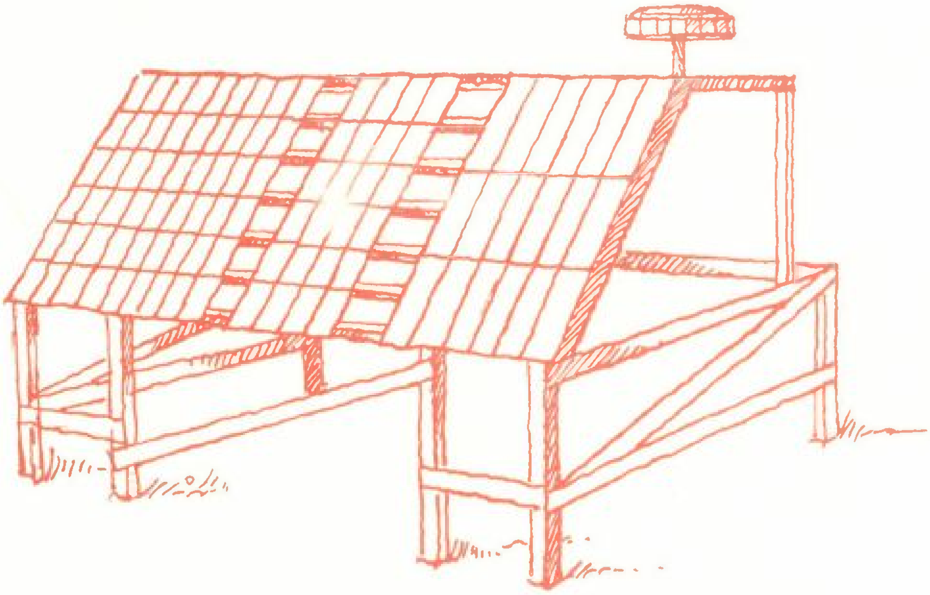
CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

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



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ENVIRONMENTAL DATA REPORT SEPTEMBER 1989 TO AUGUST 1990

JANUARY 1992

PREPARED BY THE ENVIRONMENTAL SUB-CENTRE

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ENVIRONMENTAL DATA REPORT
SEPTEMBER 1989 TO AUGUST 1990

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

ENVIRONMENTAL DATA REPORT - SEPTEMBER 1989 TO AUGUST 1990

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 within the United Nations Economic Commission for Europe (UN ECE). The programme started in September 1987 and involves exposure at 39 test sites in 11 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 third year of exposure, September 1989 to August 1989.

The yearly values for all test-sites for all three years are included in this report. To illustrate the quality of the data reported a statistical treatment of the daily gas measurement is performed.

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 sum of the daily values. 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 following tables. The data have been subjected 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 first and second year, the missing monthly value is substituted with the mean value from the same month for the two 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 (T_M)

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

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)

$$TOW = \sum_0^i {}_i TOW_i$$

Sunshine hours (sh)
(for incomplete data sets see chapter 4)

$$sh = \sum_{0}^{i} sh_i$$

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 G_M

$$G_M = \frac{\sum_{0}^{i} G_i}{i}$$

For some sites where complete informations of the sampling period exist, another equation is used

$$G_M = \frac{\sum_{0}^{i} (n_i \cdot G_i)}{\sum_{0}^{i} n_i}$$

n_i = sampling period

Precipitation
(for incomplete data sets see chapter 4)

$$mm = \sum_{0}^{i} mm_i$$

weighted mean pH (pH_M)

$$pH_M = \div \log \frac{\sum_{0}^{i} [mm_i \cdot (10^{-pH_i})]}{\sum_{0}^{i} mm_i}$$

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

The yearly results for the first, second and third year, are given in Table 1 and the monthly and yearly results from September 1989 to August 1990 in Annex 1. For some test sites new corrections for the previous years are reported. The new results are given in Annex 2. The regularity of the environmental data seems to be good for the third year. However, still there are sites where the influx of data is slower and lower than expected.

For calculating dose-response equation it is crusial 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 third year results is similar to the first and second year's results. In Figure 1-4 scatter plots of TOW, SO_2, NO_2 and pH for the second versus the third 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 NO_2 results were clustered around the y=x line in the same way as the previous years. The MILAN results were somewhat higher the third year than the second.

The SO_2 results deviate from the y=x line when the third year results are compared with the first and second year. Particularly the sites with high SO_2-concentrations; Kopisty, Prague and Milan had lower concentrations the third year.

The TOW results clustered nicely around the y=x line for the second and third year. The pH values for three sites deviate significantly from the y=x line. The sites are Madrid, Toledo and Moscow. For Madrid the second year results deviate (pH = 6.42 compared to pH = 5.26 and 5.14) and for Toledo the third year (pH = 6.20 compared to pH = 5.27 and 5.23). For Moscow a low mean value of pH = 4.89 is observed the second year compared to pH = 6.18 and 6.22 to first and third year.

When the ECE programme started it was important to find test sites with different concentrations of SO_2, NO_2 and H^+ (pH). The figures show that we have been reasonably successful in selecting sites. The yearly mean concentrations for SO_2 ranges from 1 $\mu g/m^3$ to 80 $\mu g/m^3$ with the majority of sites reporting from 10 to 20 $\mu g/m^3$. For NO_2 the distribution is even better with yearly mean concentrations ranging from 4 to 80 $\mu g/m^3$ plus one site (Milan) with more than 100 $\mu g/m^3$.

The pH was between 3,9 and 6,2 and TOW between 1 800 and 6 000 hours per year. There are also fairly large observed variations for the other precipitation parameters at the different sites. Bilbao (SPA32) had the highest concentrations of ions of all sites. Many of the test sites closer to the Atlantic ocean are more or less affected by seaspray and marine aerosols contribution. This is particularly the case for the sites in the United Kingdom, Lisboa, two Norwegian sites and the sites in the Netherlands. In addition high chloride concentrations are observed at the Italian and Spanish sites which seem not to be caused by sea salts.

8 CHARACTERIZATION OF THE GAS DATA COLLECTED ON DAILY BASIS

8.1 STATISTICAL CHARACTERIZATION OF THE YEARLY CONCENTRATIONS

In studying the effects of the environment on materials, we need a properly chosen characterization of the environment. However, the parameters we choose may some time be selected more for our convenience than for the purpose of making a good model for the type of effect observed. Data collected on daily basis will give us the best opportunities for the characterization needed. In addition to better information about the precision of data collected, it gives us the possibility to generate more complex integrated exposure parameters for the data.

The arithmetic mean of the concentrations is representative of the total load of the compound at a given site, disregarding if the load was received during one extreme episode or in longer periods with lower concentrations. The percentiles, on the other hand, provides a characteristic more suited for situations when we expect to find an effect only when concentrations are high for longer periods. Other characteristics can be suitable for other relations between the compounds and the materials.

The following Tables 2, 3 and 4 provide the arithmetic mean, the maximum, the sample median the 90-percentile and standard deviation of the mean for the daily data. Percentage of valid days from where these characteristics are based are given in Annex 1, where the mean values are also available.

Table 2 gives an estimate of the arithmetic mean and absolute maximum of the concentrations. The mean here is an unweighted arithmetic mean of the available daily concentrations. Some authors, working with environmental effects, have constructed a dose-response model where the dose is characterised by a mean-to-maximum ratio. This can eventually be calculated from the table.

Table 3 gives an overview of sample median and 90-percentiles of the available daily concentrations. If a full year of data is available, the concentrations are higher than the 90-percentile in 37 days, and higher than the median in 183 days.

Table 4 gives an overview of the mean and standard deviation of the observed concentrations, based on daily data. This provides us with some measure of variability in the data.

Figure 5 gives a comparison of the mean value, median and 90-percentile for SO_2 and NO_2 for the measurement season 89/90. These characteristics are generally well correlated but as we see, for individual stations there may be a difference between mean and median (e.g. site 31 both for NO_2 and SO_2). Therefore, the classification based on 90-percentile, mean or median may also be different. Only sites with most of the measurements available are presented, for number of available days see Table 5.

Table 5: Number of valid days at sites included in Figure 5.

Site	Valid N		Site	Valid N	
	SO_2	NO_2		SO_2	NO_2
5	365	313	21	354	360
7	358	361	22	350	364
8	361	364	23	361	365
9	324	346	24	359	362
10	350	347	26	353	345
11	345	350	27	347	-
15	364	365	28	346	-
16	308	-	30	331	-
17	360	351	31	331	350
18	365	355	33	361	360
19	363	355	36	362	360
20	342	340	38	-	365

A characterization of stations based on a relative between SO_2 and NO_2 is illustrated in Figure 6. The scatter plot of 90-percentiles shows that the higher daily NO_2 concentrations are about twice as high as those of SO_2, except sites 10 and 22. Only the sites with both SO_2 and NO_2 available are presented in the Figure 6.

8.2 FREQUENCY DISTRIBUTION OF GASEOUS COMPOUNDS

In Annex 3, the cumulative frequency distributions of the daily data are plotted for the first three years of the Programme. These plots can be used for a rough quality check for the stations; it should be possible to explain most of the differences between the three years either by different data availability or by real change in the environment at the station.

There seems to be good agreement between concentrations reported for alle the three years. The maximum concentration plotted is 200 µg/m^3 for SO_2 and NO_2, and 175 µg/m^3 for O_3. Therefore the highest concentrations for some sites will not be plotted (e.g. site 15 Milan for NO_2 and SO_2). Maximum daily concentrations for the compounds are given in Table 2.

For ozone, there seems to be two types of shape of the cumulative distributions. The daily data at stations possibly unaffected by traffic seem to have a symmetrical distribution (sites 05 FIN Ahtari, 07 FRG Waldhof-Langenbrügge, 12 FRG Garmisch-Partenkirchen, 23 NOR Birkenes, 26 SWE Aspverten, 37 CAN Dorset). This is opposed to sites as 08 FRG Aschaffenburg, 13 ITA Rome, 15 ITA Milan, where low values of O_3 are registered often. This may be partly explainable by the location of the station relative to sources of nitric oxides. A similar but opposite difference can be observed for NO_2 and SO_2 (stations close to sources may tend to have a symmetrical distribution). The feature may perhaps be demonstrated on data from 15 ITA Milan, where there are substantial sources of SO_2 and NO_2, and a traffic-related sink for O_3. On data for 89/90 at sites 24 and 38 it can be seen, how the shape of the distribution is also affected by missing data. Both sites have missing observations in winter months, which leads to a symmetrical distribution of O_3.

For SO_2, the distributions are genereally rather skew, with an overweight of low values. Some difference in the cumulative distributions can be seen for the following sites:

08 FRG Aschaffenburg (87/88 higher because of missing June to August 1988);
12 FRG Garmisch-Partenkirchen (88/89 the upper 10% of concentrations ca. 2x higher than the other years. 88/89 has almost a full year of data, while data are missing in May and June 90 and in June, July and August 88);
13 ITA Roma (missing data the later years);
18 NL Eibergen and
19 NL Vredepeel (some missing data at low concentration months in 88);
24 SWE Stockholm South (there seems to be gradual decrease in concentrations from 87/88 to 89/90, max. 10 missing days each year);
25 SWE Stockholm Centre (missing data the later years);
33 SPA Toledo (missing data in July and August 88, increase from 88/89 to 89/90);
36 POR Lisbon (some missing days April and May 89);
39 USA Steubenville shows a good agreement between the years despite missing November 87 and March 88, and July and August 90.

For NO_2, the curves tend to be more S-shaped indicating a more symmetrical distribution. Some differences can again be explained by missing data:

08 FRG Aschaffenburg (missing data in June, July and August 88);
12 FRG Garmisch-Partenkirchen (missing data June, July and August 88);
13 ITA Rome (missing data all three years);
15 ITA Milan (missing data in June and July 88; higher values 89/90 than 88/89);
17 NL Vlaardingen (some missing days June/July 88);
24 SWE Stockholm South (some missing data 87/88);
31 SPA Madrid (missing data September 88);
33 SPA Toledo (some missing data 87/88);
36 POR Lisbon (some missing data, whole September 87, 88/89 seems lower, not due to missing data);

38 USA Triangle Park (good agreement, however, missing April and May 89);
39 USA Steubenville (good agreement, missing November 87, March 88, July and August 90).

Ozone O_3 is reported on daily basis at roughly half the stations. The available distributions seem in general to be symmetrical. Some of the differences are possibly explainable by missing data:

07 FRG Waldhof-Langenbrugge (missing January and February 88, some days in June 88. However, the extremely low values of 1987 may indicate a problem with the measuring instrument);
13 ITA Rome (missing months from March 1990);
38 USA Triangle Park (for 1990 available only April through August data, for 1989 not available April, July, August);
39 USA Steubenville (not available November 87, March 88, and July and August 90).

8.2.1 Validation of the law of frequency distribution of the gaseous compounds

Much work has been produced on investigating the frequency distribution of environmental data. One of the first empirical models for environmental data was described by Larsen (e.g. Larsen, 1969; 1971). This model uses the lognormal law of distributions, and gives in detail graphical methods for estimating the parameters of the lognormal distribution.

This model has later been critisized on the basis of not accounting for the seasonal variations and for autocorrelation. The model describes data collected with time resolution varying from five minutes to one year, and it is reasonable to anticipate the presence of autocorrelation especially for the more densely collected data.

The theoretical lognormal distribution was described in detail earlier (Aitchinson and Brown, 1957). Other authors have used other laws of distribution, such as e.g. the Weibull distribution (Gilbert, 1987).

Despite the theoretical problems, the log-normal law of distribution of the environmental data is being used most widely (Gilbert, 1987). We have run some tests to validate this supposition; in brief it is already discussed above (symmetry of the distributions). The results are based on calculations using the SPSS-package (SPSS Inc.).

The test results for the daily data are presented as three-year, one-year and monthly series. The one-year and monthly series are of discussed later when talking about precision of estimating the mean value. The three-year series interests us because in case we were able to establish the result here, it would be possible to make a conclusion about the sub-samples, as well.

8.2.2 Empirical distribution of the whole measuring series

Figure 7 shows a frequency distribution function of the three years of the daily data on Site 16 ITA Venice, both for the original data and for their logarithms, and a theoretical normal curve with the parameters calculated from the data. For SO_2, we can see that the frequencies are positively skewed for the original distribution, and in good agreement with the log-normal curve. For NO_2 and O_3, the untransformed concentrations are positively skewed, and the log-transformed concentrations negatively skewed.

Four types tests were carried out to test for normality/ log-normality for the available series. For both untransformed and logarithmically transformed concentrations, skewness and kurtosis were estimated (for definition see Gilbert (1987) p. 156), their confidence intervals established and compared to a theoretical value for normal distribution. Further, D'Agostino and Kolmogorov-Smirnoff tests for goodness-of-fit were used to see the fit to normal resp. log-normal distribution. Except for the D'Agostino test, these are asymptotic tests that can well be used for the whole three years of data available (for D'Agostino test see e.g. Gilbert (1987) p. 160, for Kolmogoroff-Smirnoff test e.g. Owen (1962) p. 423). The results are summarized in Table 6.

For SO_2, log-normal model fits best, for NO_2 the results indicate that neither distribution fit (as we indeed see from Figure 7), and for O_3 the normal distribution seems to be preferred.

Table 6: Results of tests for normality and log-normality, three year measuring series.

	No. samples	Rejected normality				Rejected log-normality			
		skew.	kurt.	D'Ag.	K-S	skew.	kurt.	D'Ag.	K-S
SO_2	36	3	18	36	36	0	0	24	26
NO_2	31	2	5	29	28	0	1	26	29
O_3	22	0	0	11	15	0	1	18	18

skew = skewness   D'Ag. = D'Agostino test for normality
kurt = kurtosis   K-S = Kolmogorov-Smirnoff test for normality

8.2.3 <u>One-year measuring series</u>

Figures 8, 9 and 10 show the confidence intervals of the estimated skewness and kurtosis both for logarithmically transformed data and for the original data for SO_2, NO_2 and O_3.

An asymptotic test for normality of a sample used here (or log-normality in case of the lognormally transformed daily concentrations) is carried out from the skewness and kurtosis. From the figures it can be seen if they are approximately equal to those of normal distribution, which has the sample skewness 0 and sample kurtosis equal to (3-6/(n+1)), where n is the sample size. In the graphs, the value of three is already subtracted from the kurtosis estimate, and the value of 6/(n+1) would be about 1/50 or 0.02 for 300 samples, and ca. 0.06 for a year with 100 days available.

From the graphs we can see that for SO_2 and NO_2, for many of the yearly samples the skewness and kurtosis of the log-transformed data is not far from zero, so that the log-normal distribution may provide an approximation for the underlying data distribution. For O_3, the untransformed data seem to have characteristics closer to the normal ones than the log-transformed, so that the normal distribution may not be unreasonable.

8.2.4 Empirical distribution of the monthly series

Frequency distributions of three months of 1989 at site 16 of the untransformed data are presented in Figure 11, where a theoretical normal curve is also plotted. Thirty or thirty-one days are relatively a small amount of data for the goodness-of-fit test to reject the hypothesis of good fit, however, Table 7 summarizes the results of tests for normality using skewness and kurtosis. All months with at least 30 valid days available were included in the test. The test precision is probably not very high, since the test is asumptotic, however, it gives some information about the symmetry (skewness) and shape of the distribution. In most samples, neither normality nor log-normality were rejected. For SO_2 and NO_2, the tests seem to slightly prefer the log-normality.

The logaritmic transformation is also used as a variance-stabilizing transformation. That the variance (resp. its square root the standard deviation) increases with the mean value is to be seen in Figure 12, where the estimated arithmetic means are plotted versus the estimated standard deviations for the three gases. Here, in agreement with the results found above, the

Table 7: Tests for normality of all available monthly series with at least four daily values (most months have more than 50% valid days).

	No. samples	Rejected normality		Rejected log-normality	
		skew.	kurt.	skew.	kurt.
SO_2	1119	7	107	1	8
NO_2	998	1	24	3	14
O_3	623	1	5	0	15

skew. = skewness
kurt. = kurtosis

standard deviation seems to rise rather sharply with higher mean values for SO_2 and NO_2, while it rises for low O_3 concentrations but remains rather constant for mean concentrations above ca. 15 $\mu g/m^3$. This supports the suggestion of log-normality of the sulphur and nitrogen dioxides and of normality of ozone.

8.3 DATA AVAILABILITY AND ITS CONSEQUENCE FOR CALCULATING MEAN VALUES

The rules for calculating monthly and yearly mean concentrations are described in Section 5. The justification of these procedures have not been discussed, however.

In an environmental monitoring network, we wish:

- to assure same high quality for all collected data,
- to extract as much information from these data as possible.

Here, we shall briefly touch the question of calculating the yearly mean, and in some more detail the topic of monthly means.

When talking about "quality", we may mean the "precision", that can be expressed f.ex. as a confidence interval for the means. While the arithmetic mean itself is a characteristics which does not depend on any underlying distribution but represents the "centre of gravity", the question of applicability of the mean and of its precision is related to the frequency distribution of the measured values. The confidence interval of the mean is different for normal distributed values compared to log-normal distribution.

8.3.1 Mean concentration representative of the year

For the report of the first year results, the mean yearly concentration was calculated on the basis of monthly values, which is convenient when some data are not reported daily but weekly or monthly, but this is not equivalent to the mean calculated from the daily data unless the monthly means are based on equal number of daily observations for all the months.

For daily data this problem can be overcome by weighting, provided that in addition to the monthly mean we also know how many days it is based on. To explain, let $x_1,..,x_N$ be the daily observations, N be the number of days available in a year, n_i number of days available in a month i, $i=1,..,M$ where M is the available number of months, $j_i=1,..,n_i$ number of days available in month i, the yearly arithmetic mean based on daily observations Z_1, the yearly arithmetic mean based on monthly observations Z_2, and z_i be the individual monthly means. Then for Z_1 to be equivalent to Z_2, it is necessary that

$$Z_2 = (1/M) \sum_i z_i * (n_i * M/N)$$

We of course assume that $z_i = (1/n_i) \sum_j x_{j\,i}$ where i is the index for month and j_i for day, and $Z_1 = (1/N) \sum_{ij} x_{j\,i} = (1/(\sum_i n_i) \sum_{ij} xj_i$.

An additional complication arises when some months are represented by less than 50% of the daily data; then the monthly mean will be excluded from the calculation based on monthly means automaticaly. It may seem reasonable not to calculate the monthly mean in such cases (see later), however, this should be judged against loosing any information about the month.

It is known and can be seen from the data summaries, that there is a pronounced seasonal variability in the data. This variability can account for between 10 and 25% of the total variability in the data, and determines to a high degree the concentration. A "low" and a "high" month usually represents concentrations which are different by more than a factor 2 for all the three gases. This difference is much higher than the possible difference due to imprecision. This may be demonstrated in the following rather extreme example based on O_3-data from season 88/89 site 17.

The monthly means are (starting September 88) 33, 16, 10, 25, 10, 25, 10, 33, 59, 56, 65, 51 ($\mu g/m^3$). Let us suppose that these data are drawn from a normal distribution (see Figure 9). The annual mean using the data for 8 highest months is 43.4 (standard error of the mean 1.88), the annual mean using the data for 8 lowest months would be 20.3 (standard error of the mean 1.17); and the annual mean based on the twelve months 32.8 (standard error of the mean 2.44); all these means are significantly different from each other.

Let us suppose, that all available months are represented by approximately the same number of observations, and that some months are missing completely. The question arises, how many missing months can we accept and still calculate the annual mean concentration. It would seem reasonable that the rule be based on data availability on seasonal basis, f.ex. max. 2 non-consecutive months in one season missing.

As is demonstrated further in the text, the rule of excluding the monthly means where less than 50% of the data are available is reasonable for for obtaining the same precision for the monthly means, however, the same rule may reduce the precision for the purpose of calculating the annual mean concentration.

In the environmental reports 3 and 9 the rules have therefore been changed. For sites where daily data is reported. All available data is included in the calculations for the yearly mean values.

8.3.2 Mean concentrations representative for a month

The monthly series were demonstrated to comprise of data that can be in many cases considered normal or log-normal. It is therefore possible to construct an approximate 5% confidence interval for the mean, based on a critical t-value and standard error of the mean.

To validate the rule of accepting the month mean based on at least 50% of data valid, a simulation was performed for all three gases untransformed and logaritghmically transformed. As a basis for the simulation, for each compound, all months with 31 valid days were used (380 for SO_2, 310 for NO_2 and 215 for O_3). From these, k days chosen at random were consecutively set to missing, k=1,..,25, so that subsamples of smaller size were available. For these, the half-width of the confidence intervals was calculated. Its characteristics are plotted in Figure 13 for the untransformed data.

As can be seen from the diagram, the median half width of the interval is relatively stable for valid days between 31 and 20, and then it starts to rise. We can therefore conclude, that accepting the mean with at least 75% of days with data without a remark and with at least 50% of the data marked with an astrisk, seems to be a reasonable rule of thumb.

9 CONCLUSION OF THE STATISTICAL CHARACTERIZATION

Additional characteristics of the annual data series were presented (mean, median, 90-percentile). These characteristics are in most cases in good agreement, however, when 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. 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 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 were found reasonable. However, if we exclude daily data for calculation of annual means for other reasons than erroneous result, we are loosing information. Therefore we have chosen to use all available daily values for this calculation.

It is thought important that the data be reported to the Environmental centre on daily basis, whenever possible. This facilitates the data control, but first of all, gives a possibility to use more advanced characteristics of the environmental data in the analysis of effects.

10 REFERENCES

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.)

Aitchinson, J. and Brown, J.A.C. (1957) The lognormal distribution. Cambridge, Cambridge University Press.

Gilbert, R.O. (1987) Statistical methods for environmental pollution monitoring. New York, Van Nostrand Reinhold Co.

Henriksen,J.F., Arnesen, K. and Rode, A. (1991) Environmental data report, Sept. 1987-Aug. 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).

Larsen, R.I. (1969) A new mathematical model of air pollutant concentration averaging time and frequency. J. Air Poll. Contr. Ass., 19, 24-30.

Larsen, R.I. (1971) A mathematical model for relating air quality measurements to air quality standards. Research Triangle Park, US Environmental Protection Agency (AP-89).

Owen, D.B. (1962) Handbook of statistical tables. New York, Addison-Wesley Publishing Company.

TABLES AND FIGURES

Table 1: Yearly mean values for all parameters and sites for first, second and third year of the programme.

Site no.	Year	CLIMATE				GASES			PRECIPITATION						PRE.-OPTIONS				
		Temp.	RH	TOW	Sun	SO_2	NO_2	O_3	mm	pH	SO_4-S	NO_3-N	Cl	Cond.	NH_4-N	Na	Ca	Mg	K
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 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 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
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 5	87-88	3.1	78.	2810.	1566.	6.3	5.0	52.	801.3	4.53	.71	.33	.26	19.1	.35	.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	.31	.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	.22	.13	.08	.02	.07
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					
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	.92	.47	.56	.10	.13
FRG 7	88-89	10.0	81.	4867.	1374.	11.4	13.0	69.	448.4	4.35	1.47	.86	1.42	39.4	.95	.65	.72	.16	.18
FRG 7	89-90	10.2	80.	4390.		11.0	11.6	64.	499.7	4.45	1.35	1.12	1.66	37.9	.94	.80	.67	.18	.19
FRG 8	87-88	12.3	77.			23.7	33.2	27.	626.9	4.96	2.44	1.17	1.87	44.6	1.33		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	1.54		1.41		
FRG 8	89-90	12.2	67.	2541.		14.2	39.5	31.	655.4	4.39	2.63	.93	2.75	75.3	3.62				
FRG 9	87-88	10.7	77.	4220.	1315.	24.5	42.8		782.9										
FRG 9	88-89	11.2	78.	4754.	1475.	25.7	49.9		686.0										
FRG 9	89-90	11.7	80.	4940.	1624.	20.3	44.4		697.6	4.44	1.75	.74	1.75	39.0	1.11	1.41	.92	.18	.26

Table 1, cont.

Site no.	Year	CLIMATE				GASES			PRECIPITATION						PRE.-OPTIONS				
		Temp.	RH	TOW	Sun	SO_2	NO_2	O_3	mm	pH	SO_4-S	NO_3-N	Cl	Cond.	NH_4-N	Na	Ca	Mg	K
FRG10	87-88	11.2	75.	4077.	1430.	50.6	47.9		873.8										
FRG10	88-89	11.6	76.	4594.	1690.	48.6	49.5		733.7										
FRG10	89-90	12.0	76.	4107.	1812.	48.5	46.4		696.6	4.60	2.69	.81	5.35	54.6	1.34	2.22	1.72	.38	1.28
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	4.38	1.95	.87	2.22	43.5	1.25	1.67	1.09	.20	.32
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	4.81	.87	.52	.25	20.4	.59	.23	.53		.05
FRG12	89-90	7.3	82.	4201.	1940.	6.1	14.3	55.	1183.1	4.77	.86	.49	.25	18.5	.55	.21	.45		.05
ITA13	87-88	15.4	66.	1013.		29.4	69.2	26.	591.4	4.60									
ITA13	88-89	16.1	62.	1611.		44.9	69.5	27.	509.3	4.68									
ITA13	89-90	17.4	65.	2267.		38.5	62.5	23.	463.3	4.74									
ITA14	87-88	14.6	71.	3578.					650.2	4.94	.80	.04	1.30	20.7		.48			.06
ITA14	88-89	14.0	70.	2996.					674.2	4.80	1.01	.10	7.99	38.5					
ITA14	89-90	14.3	72.	3714.		7.4	8.3	56.	626.1	5.38	.76	.11	2.11	38.8					
ITA15	87-88	15.3	72.	3548.		72.2	109.2	18.	1124.7	4.22	13.20		4.82						
ITA15	88-89	14.9	79.	3458.		82.7	99.1	16.	1003.7	4.50	8.60	5.41	2.71	57.3	1.51	1.86	4.50	.63	.24
ITA15	89-90	15.4	72.	3036.		65.4	120.9	22.	659.8	4.19	4.26	2.57	3.28	76.5	1.82	1.15	5.33	.92	.41
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					
NL 17	87-88	10.5	84.	5875.	1313.	35.3	52.1	28.	977.7	4.44	1.52	.51	4.86	48.6	.91	2.49	.51	.32	.15
NL 17	88-89	11.0	83.	5589.	1663.	31.8	57.2	33.	685.9	4.41	1.55	.59	4.61	48.9	1.01	2.53	.33	.31	.18
NL 17	89-90	11.3	81.	4996.	1810.	32.5	56.7	32.	692.0	4.42	1.79	.54	7.64	59.7	.95	4.20	.45	.51	.26
NL 18	87-88	9.9	83.	5459.	1230.	10.1	23.2	40.	904.2	5.45	1.52	.54	1.88	30.1	1.79	1.11	.22	.11	.11
NL 18	88-89	10.2	82.	5280.	1507.	8.0	26.9	46.	710.5	5.50	1.38	.54	2.87	32.2	1.77	2.33	.21	.19	.12
NL 18	89-90	10.9	79.	4482.	1643.	8.5	26.5	47.	705.9	5.34	1.63	.60	2.96	35.6	1.78	1.77	.24	.18	.28
NL 19	87-88	10.3	81.	5354.	1292.	13.0	28.7	36.	845.0	5.32	1.61	.57	1.50	31.0	1.75	.95	.33	.12	.12
NL 19	88-89	10.8	81.	5282.	1585.	10.2	33.4	39.	693.3	5.33	1.61	.60	2.00	30.9	1.83	1.07	.28	.14	.09
NL 19	89-90	11.0	81.	4969.	1709.	9.9	33.1	45.	569.1	5.31	2.29	.69	3.58	43.6	2.12	2.09	.40	.28	.26

Table 1, cont.

Site no.	Year	CLIMATE				GASES			PRECIPITATION						PRE.-OPTIONS				
		Temp.	RH	TOW	Sun	SO_2	NO_2	O_3	mm	pH	SO_4-S	NO_3-N	Cl	Cond.	NH_4-N	Na	Ca	Mg	K
NL 20	87-88	10.3	81.	5125.	1290.	13.7	28.9	39.	801.3	4.73	1.63	.66	1.61	35.4	1.29	.94	.69	.15	.14
NL 20	88-89	10.8	80.	5208.	1553.	11.2	32.0	42.	642.2	4.65	1.59	.65	1.72	35.4	1.37	.94	.48	.12	.11
NL 20	89-90	11.2	77.	4424.	1698.	10.3	26.9	45.	608.8	4.98	1.47	.54	2.37	32.0	1.18	1.41	.51	.19	.20
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
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
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
SWE24	87-88	7.6	78.	4788.	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.	2822.	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.	3486.	1837.	8.4	31.6	52.	473.2	4.44	.90	.41	.44	23.9	.34	.24	.93	.05	.11
SWE25	87-88	7.6	78.	4788.	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.	2822.	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.	3486.	1831.	10.3	40.2		473.2	4.44	.90	.41	.44	23.9	.34	.24	.93	.05	.11
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
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 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 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	9.8	96.			3.6	4.3	58.	2134.2	4.84	1.18	.06	10.87		.32	6.00	.74	.60	.49

Table 1, cont.

Site no.	Year	CLIMATE				GASES			PRECIPITATION						PRE.-OPTIONS				
		Temp.	RH	TOW	Sun	SO_2	NO_2	O_3	mm	pH	SO_4-S	NO_3-N	Cl	Cond.	NH_4-N	Na	Ca	Mg	K
UK 30	87-88	10.2	78.	3763.		15.0	86.0		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	89.	628.8	4.13	1.89	.36	4.43		.92	1.85	1.07	.28	.19
UK 30	89-90			5873.		12.1	30.0		648.2	3.84	1.38	.29	5.05		.44	2.20	.80	.31	.24
SPA31	87-88	14.1	66.	2762.	2606.	18.4	24.3	26.	398.0	5.26	1.43	.33	.61	26.5	.75	.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	.57	.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	.65	2.69	.18	.11
SPA32	87-88	15.2	74.	4221.	1368.	35.2	34.7		1355.4	4.73	8.95	2.28	6.67	54.9	1.88	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	2.92	3.28	7.02		
SPA32	89-90	16.2	71.	3769.	1879.	41.4	41.8		830.7	4.71	13.26	3.83	9.00	78.9	2.51	3.28	6.86		
SPA33	87-88	14.0	64.	2275.	2432.	3.3	9.1		785.0	5.27	.45	.12	.51	11.2	.12	.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	.21	.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	.24	.74	1.21	.12	.14
SOV34	87-88	5.5	73.	2084.	1580.	19.2	74.9		575.4	6.18	1.44	.06	1.30	28.8	1.15				
SOV34	88-89	7.0	75.	2682.	1590.	25.5	69.5		612.7	4.89	3.09	.15	.53	45.8	.80				
SOV34	89-90	5.7	76.	2894.	1592.	30.8	50.1		860.2	6.22	2.56	.14	.33	29.4	.45				
SOV35	87-88	5.5	83.	4092.	1571.	.9	2.9		447.8	4.66	1.11	.30			.28	.39	.88		
SOV35	88-89	6.9	80.	3609.	1871.	.3	3.8		588.5	4.50	.87	.30			.23	.56	.29		
SOV35	89-90	6.7	81.	4332.	1850.	.6	6.5		532.7	4.65	.75	.31	.81	19.9	.20	.55	.51	.08	.42
POR36	87-88	12.1	64.	1575.		6.8	36.8		972.0	6.06	11.63	1.01	3.18	63.5	.43	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	.55	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	.59	2.52	1.95	.42	.45
CAN37	87-88	5.5	75.	3252.	2138.	3.3	1.6	59.	961.1	4.27	.89	.62	.14	27.9	.42	.07	.26		
CAN37	88-89	4.8	73.	2676.	1985.	4.2	2.0	60.	953.6	4.33	.81	.51	.12	24.8	.36	.06	.18		
CAN37	89-90	5.1	79.	3431.	1996.	3.0	2.0	64.	1103.0	4.38	.76	.53	.11	25.0	.34	.04	.22		
USA38	87-88	14.6	69.	3178.	2610.	9.6	26.9	54.	846.7	4.29	.73	.28	.36	24.9	.18	.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	.19	.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	.26	.16	.06	.02	.03
USA39	87-88	12.3	67.	2111.	1942.	58.1	41.8	42.	733.1	4.00	1.76	.51	.48	54.0	.32	.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	.42	.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	.35	.09	.56	.08	.06

Table 2: The arithmetic mean and maximum values for sites with daily data.

Site no.	Sulphur dioxide ($\mu g/m^3$)						Nitrogen dioxide ($\mu g/m^3$)						Ozone ($\mu g/m^3$)					
	87/88		88/89		89/90		87/88		88/89		89/90		87/88		88/89		89/90	
	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	19	150	12	90	.	.	20	75	18	49	.	.	.	.	.	.	.	.
5	6	40	5	32	2	33	5	24	5	18	4	27	52	118	54	118	52	115
6	21	101	17	65	.	.	31	91	27	60	.	.	.	.	.	.	.	.
7	14	155	11	161	11	153	11	37	13	49	12	46	59	163	69	159	64	141
8	25	142	15	92	14	80	34	75	45	105	40	91	26	107	26	99	31	118
9	25	105	26	64	20	73	43	130	50	121	44	135	.	.	.	.	.	.
10	51	247	49	187	49	190	48	105	50	101	46	152	.	.	.	.	.	.
11	30	137	28	156	26	96	47	102	44	88	42	130	.	.	.	.	.	.
12	10	67	13	116	6	25	12	29	14	52	14	40	48	114	49	100	55	137
13	29	81	55	123	34	127	69	113	69	182	64	135	26	112	27	90	10	78
14	.	.	.	.	7	34	.	.	.	.	8	28	.	.	.	.	56	126
15	77	442	83	383	65	409	113	376	99	309	121	310	12	29	16	69	22	96
16	22	207	26	160	20	119	41	146	41	148	54	172	20	81	29	98	31	94
17	35	166	32	136	33	147	52	109	57	112	57	183	28	86	33	110	32	98
18	10	77	8	95	8	74	23	68	27	90	27	84	40	131	46	148	47	148
19	13	94	10	65	10	62	29	72	33	90	33	98	36	112	39	117	45	145
20	14	97	11	70	10	44	29	77	32	74	27	74	39	85	42	111	45	118
21	14	84	13	64	8	41	52	138	52	153	47	93	.	.	.	.	.	.
22	36	242	54	344	42	280	19	69	18	70	16	47	.	.	.	.	.	.
23	1	21	1	15	1	19	4	48	3	32	3	32	60	115	53	112	54	116
24	17	55	13	72	8	54	26	73	31	66	32	79	44	111	47	126	52	110
25	20	72	20	50	10	43	46	89	45	97	40	94	.	.	.	.	.	.
26	3	25	2	24	2	17	5	27	5	43	5	21	63	142	61	137	59	116
27	18	185	20	98	15	86	.	.	83	92	.	.	.	.	.	.	.	.
28	6	134	7	72	7	82	.	.	19	23	.	.	.	.	.	.	.	.
29	4	45	3	39	4	67	2	20	4	59	4	57	49	69	62	126	58	103
30	15	145	9	77	12	144	.	.	.	.	.	.	.	.	.	.	.	.
31	18	85	18	60	15	76	24	150	32	119	21	83	26	75	.	.	.	.
32	44	79	.	.	.	.	40	52	.	.	.	.	.	.	.	.	.	.
33	3	41	8	71	13	54	9	72	15	68	16	88	.	.	.	.	.	.
34	18	260	26	70	.	.	76	147	87	153	.	.	.	.	.	.	.	.
35	1	7	0	6	1	5	3	19	4	22	7	60	.	.	.	.	.	.
36	7	312	12	159	7	50	37	104	21	233	33	106	.	.	35	104	29	87
37	3	21	4	29	4	16	.	.	.	.	.	.	59	141	60	112	.	.
38	10	98	11	36	9	15	27	113	25	76	25	66	54	139	44	110	86	145
39	58	303	59	250	58	233	42	94	45	161	42	94	42	126	36	118	30	92

Table 3: The sample median and 90-percentile for sites with daily data.

Site no.	Sulphur dioxide (µg/m³)						Nitrogen dioxide (µg/m³)						Ozone (µg/m³)					
	87/88		88/89		89/90		87/88		88/89		89/90		87/88		88/89		89/90	
	Median	90-%	Median	90-%	Median	90-%	Median	90-%	Median	90-%	Median	90-%	Median	90-%	Median	90-%	Median	90-%
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	14	34	9	23	.	.	17	38	16	32	.	.	.	.	.	.	.	.
5	4	14	4	12	1	4	4	10	4	10	3	8	48	86	54	75	52	75
6	16	39	15	34	.	.	29	46	26	39	.	.	.	.	.	.	.	.
7	5	39	5	27	4	28	10	21	10	26	9	24	67	109	65	108	61	104
8	20	46	12	26	10	29	32	51	45	64	39	64	21	53	21	56	29	61
9	21	42	25	39	18	35	41	63	48	73	44	62	.	.	.	.	.	.
10	40	96	43	81	43	77	47	66	50	70	45	68	.	.	.	.	.	.
11	25	52	24	47	21	44	45	68	43	62	40	60	.	.	.	.	.	.
12	8	16	7	20	5	14	11	19	11	26	12	30	47	83	50	83	52	89
13	29	55	58	94	31	66	70	88	68	113	57	98	24	55	24	56	4	26
14	.	.	.	.	7	16	.	.	.	.	8	15	.	.	.	.	52	93
15	46	183	43	223	31	196	91	192	90	151	114	174	11	21	10	36	15	50
16	12	55	17	58	15	42	40	71	37	80	53	97	14	45	26	51	30	64
17	30	72	29	61	29	63	51	72	56	83	55	87	28	51	32	69	31	60
18	6	24	6	18	6	18	21	40	24	49	23	48	39	67	45	89	47	82
19	9	27	8	19	8	19	28	47	33	53	31	56	37	61	40	76	46	82
20	9	30	9	23	9	20	26	46	30	51	26	42	40	67	45	79	46	74
21	11	27	10	29	6	16	49	72	50	73	47	64	.	.	.	.	.	.
22	27	74	45	110	32	81	17	34	16	33	15	28	.	.	.	.	.	.
23	0	3	0	3	0	2	3	8	3	8	2	8	58	90	52	74	54	76
24	15	34	10	25	7	16	26	38	31	47	31	46	42	73	46	71	52	76
25	18	33	19	34	9	17	44	65	43	70	39	58	.	.	.	.	.	.
26	2	8	1	4	1	4	4	10	3	9	4	9	61	97	58	87	55	83
27	13	36	16	39	12	33	.	.	87	92	.	.	.	.	.	.	.	.
28	4	11	5	13	3	15	.	.	19	23	.	.	.	.	.	.	.	.
29	2	12	1	8	1	8	1	5	2	9	2	11	50	62	62	78	61	77
30	9	34	6	21	8	26	.	.	.	.	.	.	.	.	.	.	.	.
31	15	37	14	38	13	28	22	45	29	60	17	47	25	43	.	.	.	.
32	41	79	.	.	.	.	40	52	.	.	.	.	.	.	.	.	.	.
33	1	9	6	21	11	28	6	23	12	34	10	41	.	.	.	.	.	.
34	5	50	20	60	.	.	70	111	86	127	.	.	.	.	.	.	.	.
35	0	2	0	1	0	2	2	6	2	10	3	13	.	.	.	.	.	.
36	2	18	5	33	6	11	30	75	16	39	30	59	.	.	18	71	21	59
37	2	9	2	10	3	10	.	.	.	.	.	.	57	84	62	80	.	.
38	7	21	9	21	8	14	25	40	26	38	23	45	53	92	38	83	84	112
39	47	121	50	116	49	110	41	61	43	65	41	60	37	77	34	63	29	58

Table 4: The arithmetic mean and standard deviation of the mean for sites with daily data.

Site no.	Sulphur dioxide (µg/m³)						Nitrogen dioxide (µg/m³)						Ozone (µg/m³)					
	87/88		88/89		89/90		87/88		88/89		89/90		87/88		88/89		89/90	
	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.	Mean	Std.d.
1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	19	19	12	11	.	.	20	14	18	10	.	.	.	.	.	.	.	.
5	6	6	5	5	2	4	5	4	5	3	4	3	52	24	54	17	52	19
6	21	16	17	12	.	.	31	14	27	9	.	.	.	.	.	.	.	.
7	14	22	11	20	11	21	11	6	13	9	12	8	59	40	69	28	64	27
8	25	19	15	12	14	12	34	13	45	15	40	17	26	21	26	21	31	22
9	25	14	26	10	20	12	43	17	50	17	44	16	.	.	.	.	.	.
10	51	35	49	26	49	30	48	16	50	16	46	19	.	.	.	.	.	.
11	30	20	28	17	26	16	47	16	44	13	42	15	.	.	.	.	.	.
12	10	8	13	19	6	5	12	5	14	9	14	9	48	28	49	24	55	28
13	29	19	55	30	34	23	69	15	69	30	64	25	26	21	27	21	10	13
14	.	.	.	.	7	6	.	.	.	.	8	5	.	.	.	.	56	24
15	77	76	83	86	65	82	113	59	99	43	121	43	12	6	16	14	22	19
16	22	30	26	26	20	18	41	24	41	29	54	30	20	17	29	18	31	23
17	35	24	32	21	33	22	52	16	57	19	57	24	28	18	33	25	32	21
18	10	12	8	10	8	8	23	12	27	15	27	16	40	24	46	32	47	28
19	13	14	10	8	10	7	29	13	33	14	33	16	36	21	39	27	45	28
20	14	14	11	9	10	7	29	13	32	13	27	12	39	22	42	26	45	25
21	14	11	13	10	8	7	52	18	52	22	47	14	.	.	.	.	.	.
22	36	36	54	45	42	36	19	12	18	11	16	8	.	.	.	.	.	.
23	1	2	1	2	1	2	4	5	3	4	3	4	60	21	53	16	54	17
24	17	12	13	9	8	7	26	10	31	12	32	12	44	22	47	20	52	19
25	20	11	20	10	10	6	46	13	45	17	40	15	.	.	.	.	.	.
26	3	4	2	3	2	2	5	4	5	4	5	4	63	24	61	19	59	21
27	18	19	20	16	15	13	.	.	83	12	.	.	.	.	.	.	.	.
28	6	12	7	7	7	11	.	.	19	4	.	.	.	.	.	.	.	.
29	4	6	3	6	4	8	2	3	4	7	4	8	49	11	62	16	58	18
30	15	19	9	10	12	16	.	.	.	.	.	.	.	.	.	.	.	.
31	18	14	18	14	15	10	24	19	32	23	21	18	26	14	.	.	.	.
32	44	34	.	.	.	.	40	17	.	.	.	.	.	.	.	.	.	.
33	3	6	8	11	13	10	9	12	15	13	16	17	.	.	.	.	.	.
34	18	37	26	19	.	.	76	32	87	33	.	.	.	.	.	.	.	.
35	1	1	0	1	1	1	3	2	4	4	7	11	.	.	.	.	.	.
36	7	19	12	20	7	8	37	25	21	25	33	19	.	.	35	26	29	20
37	3	4	4	5	4	5	.	.	.	.	.	.	59	23	60	17	.	.
38	10	11	11	7	9	3	27	15	25	10	25	13	54	27	44	25	86	19
39	58	47	59	45	58	43	42	15	45	19	42	16	42	26	36	21	30	19

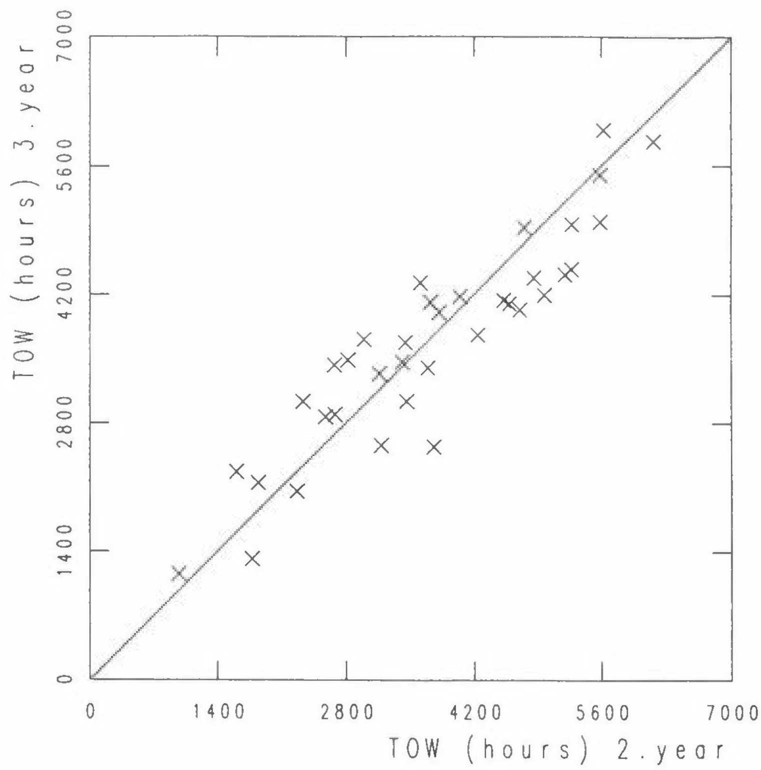


Figure 1: Scatterplot for TOW yearly mean values for the second versus the third year results.

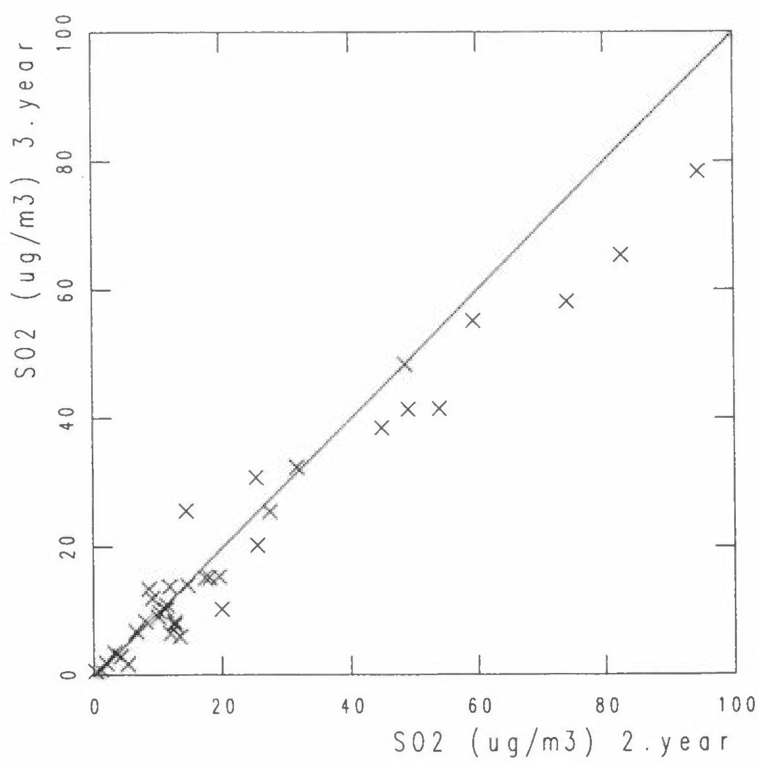


Figure 2: Scatterplot for SO_2 yearly mean values for the second versus the third year results.

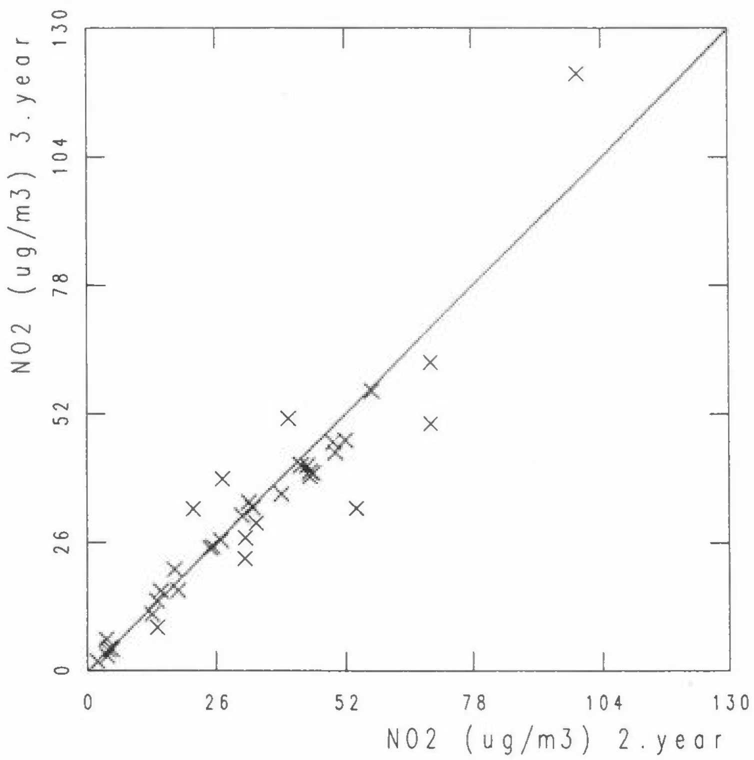


Figure 3: Scatterplot for NO_2 yearly mean values for the second versus the third year results.

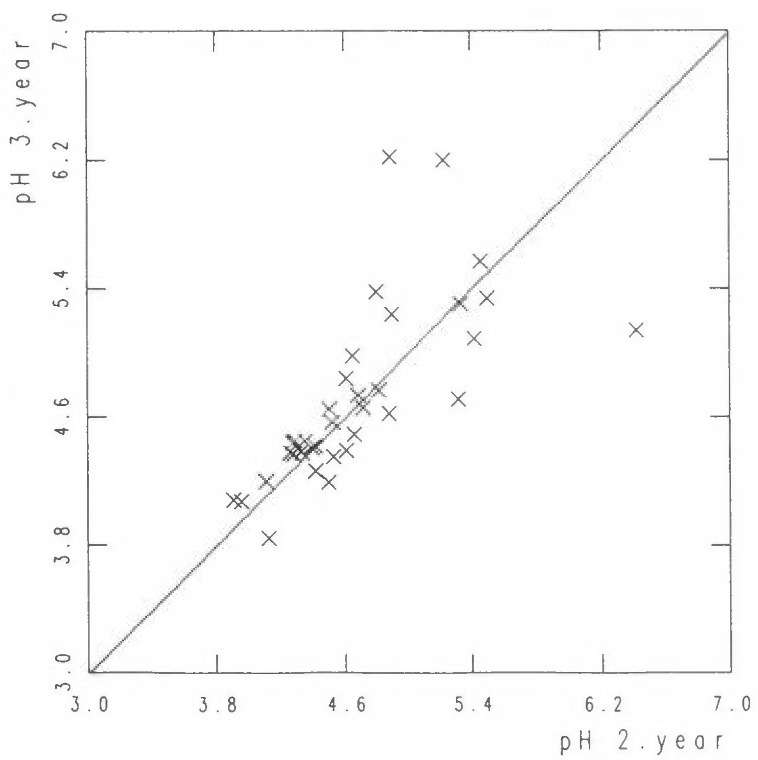
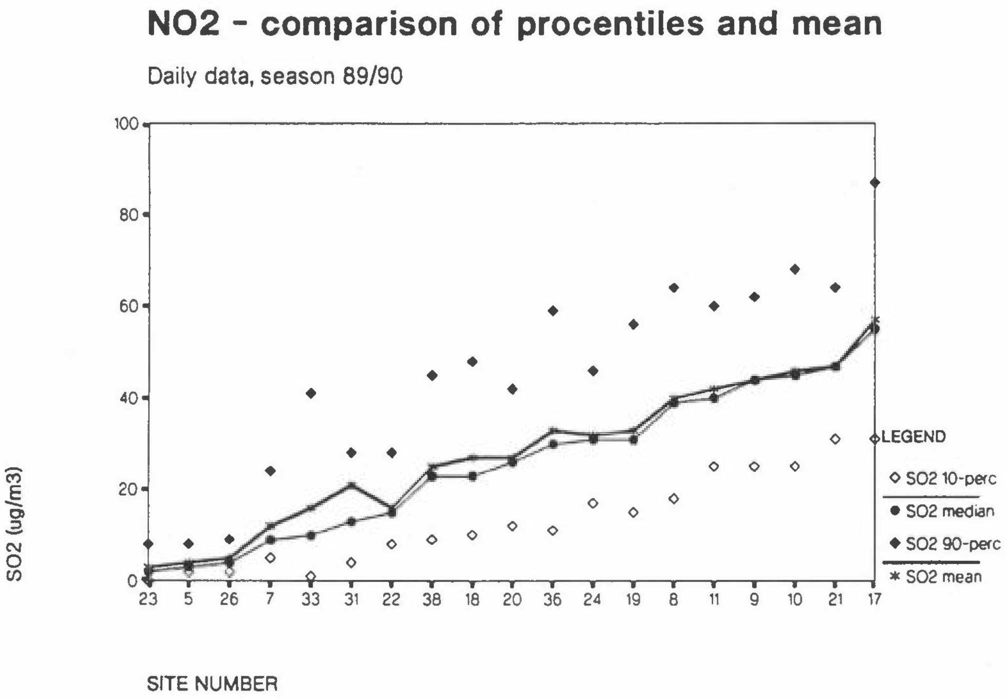


Figure 4: Scatterplot for pH yearly mean values for the second versus the third year results.



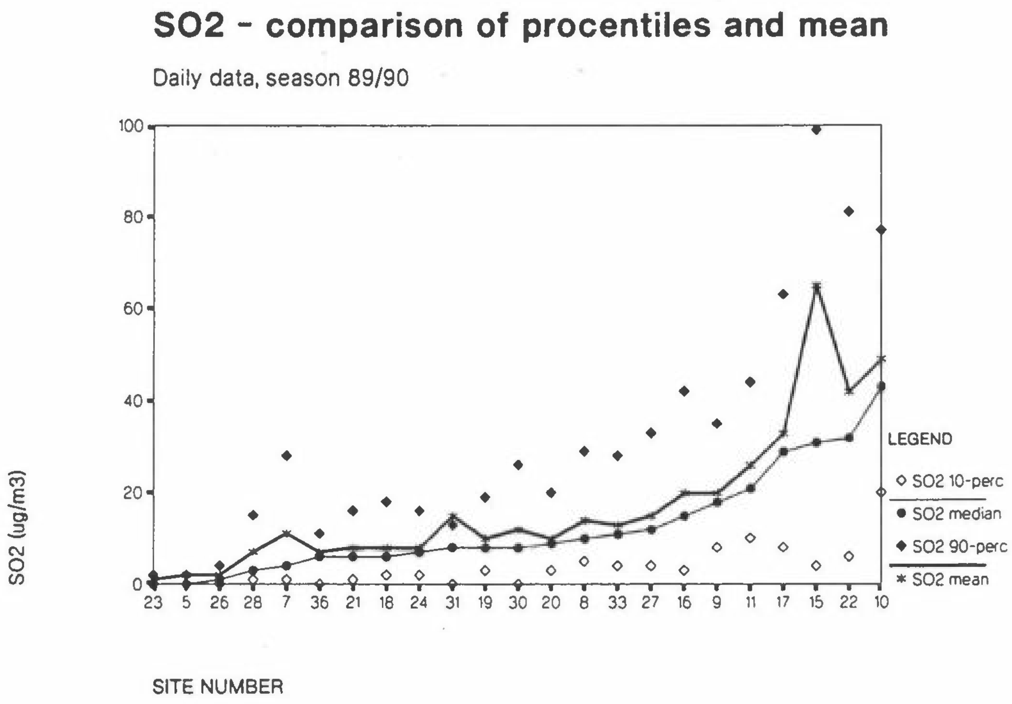


Figure 5: Comparison of percentiles and mean values at individual sites for the third monitoring season for SO_2 and NO_2. For number of days available at each station see Table 5.

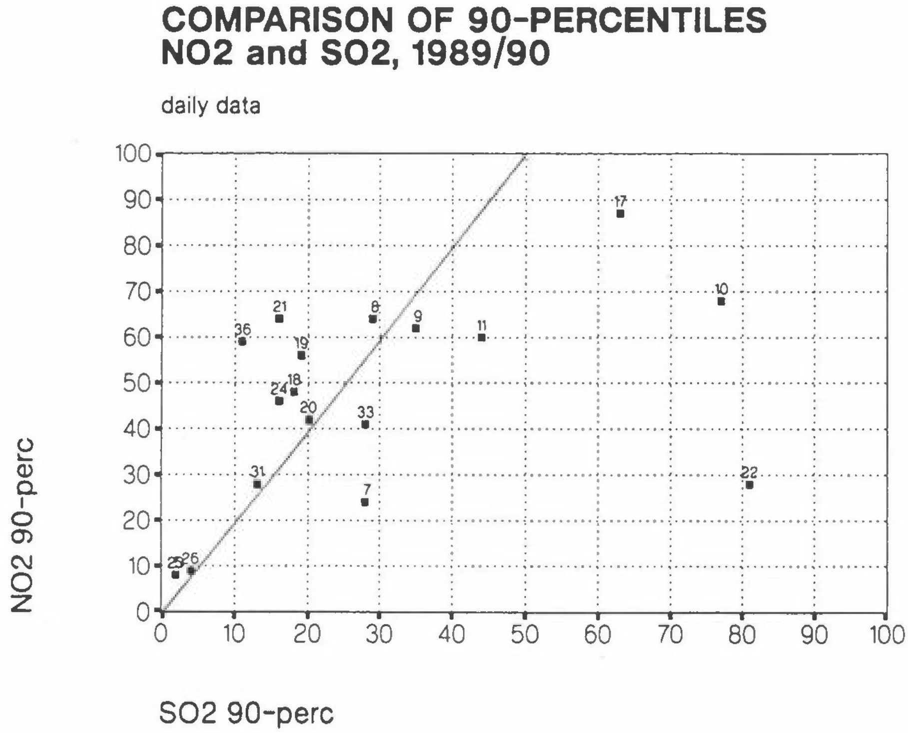


Figure 6: Comparison of 90-percentiles for NO_2 and SO_2, same sites as Figure 5.

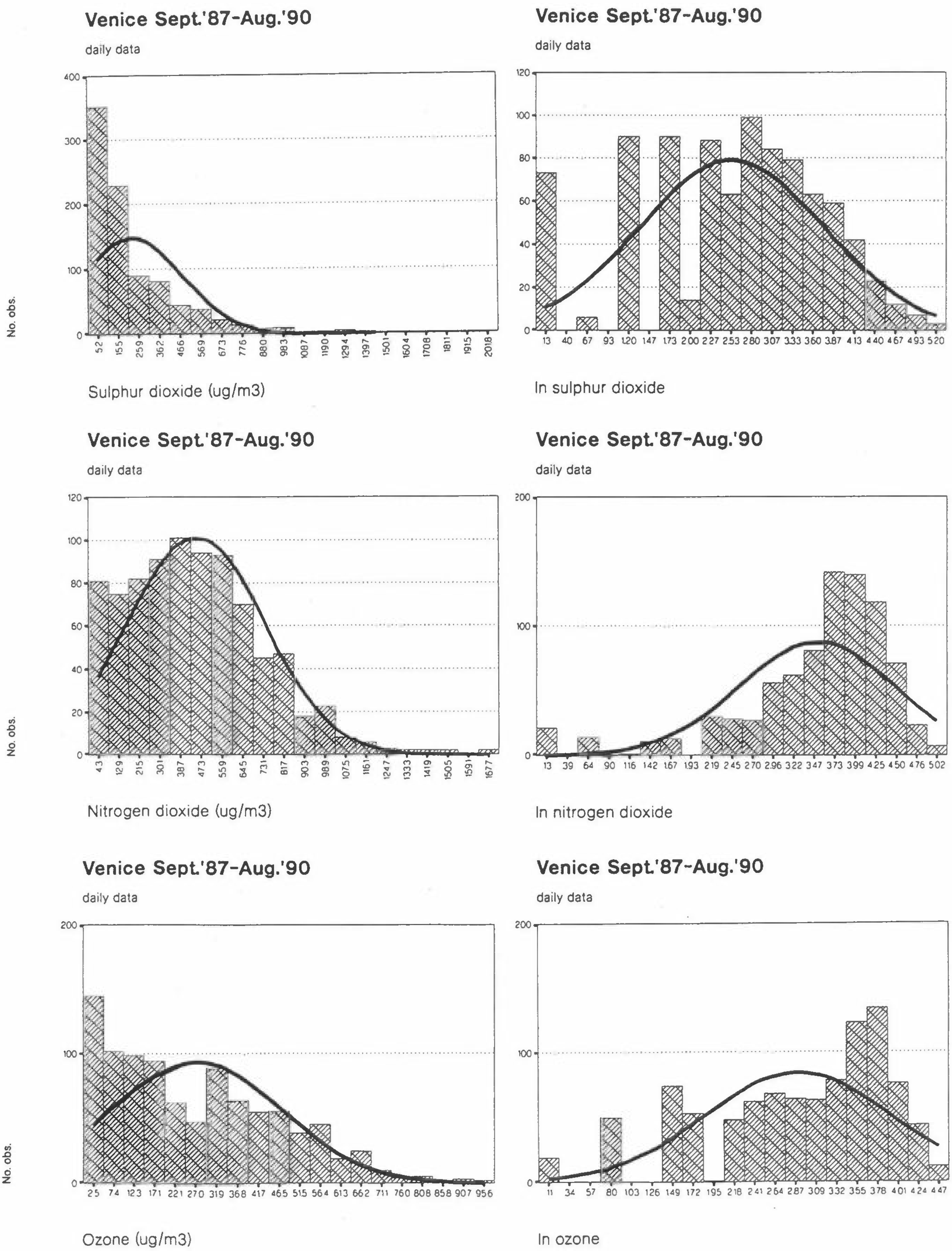


Figure 7: Empirical frequency distributions of three years of daily data at site 16 ITA Venice for SO_2, NO_2 and O_3. Data are presented both untransformed and logarithmically transformed. Theoretical curve of normal distribution with same parameters is indicated for comparison.

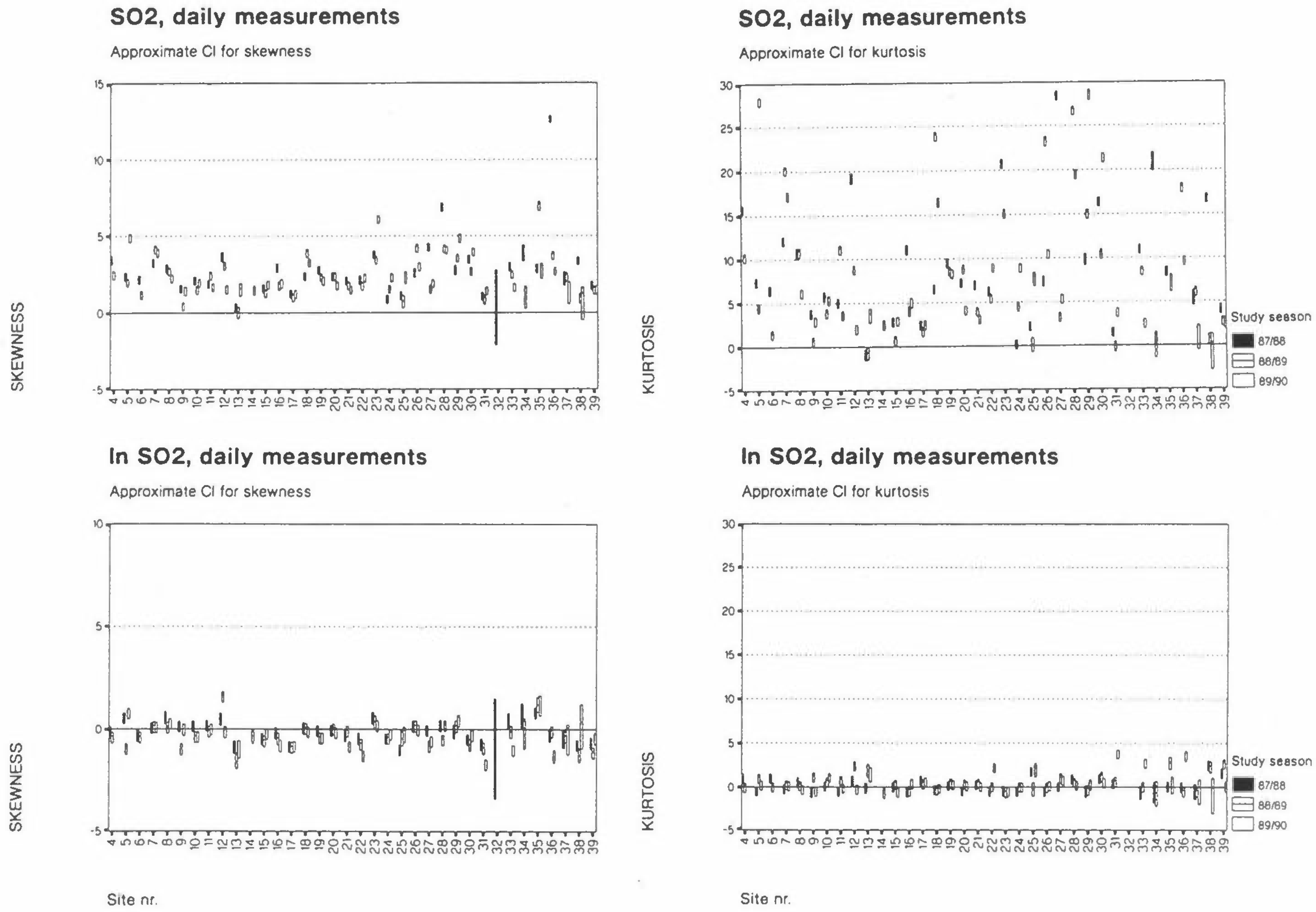


Figure 8: Diagram of estimated confidence intervals (CI) for skewness and kurtosis for SO_2 and ln SO_2 by site and monitoring years. For normal distribution, the confidence interval should contain zero.

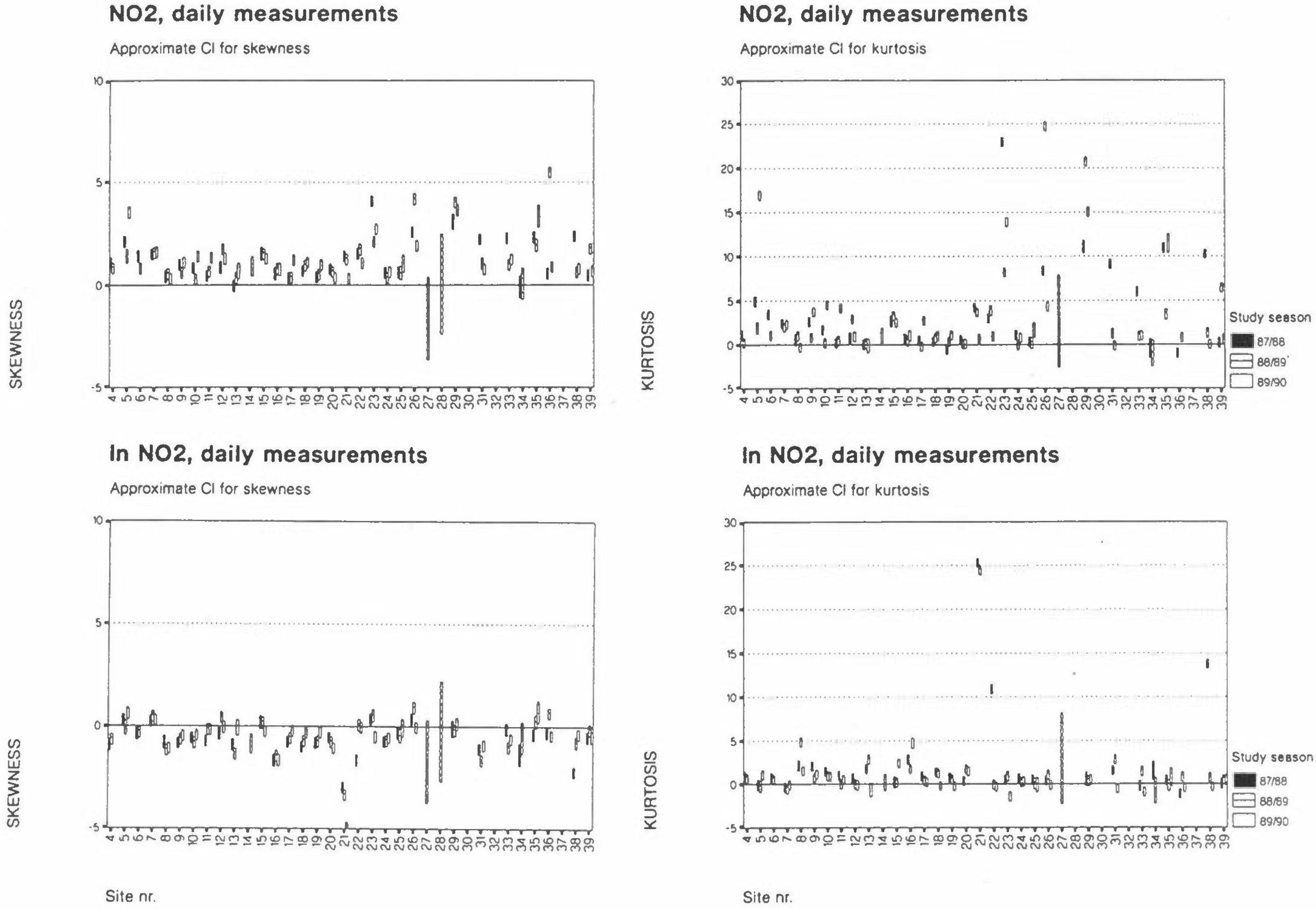


Figure 9: Diagram of estimated confidence intervals (CI) for skewness and kurtosis for NO_2 and ln NO_2 by site and monitoring years. For normal distribution, the confidence interval should contain zero.

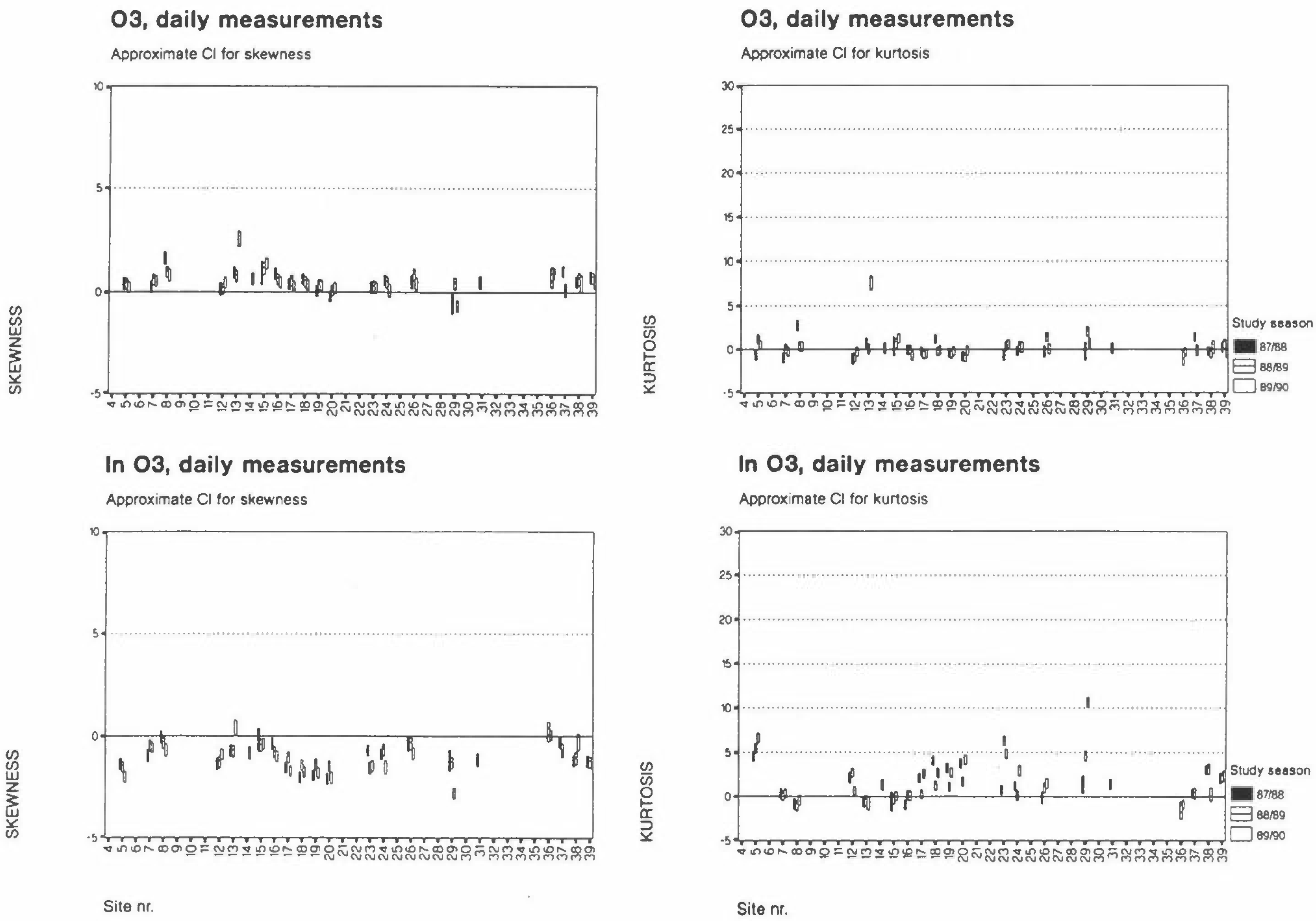


Figure 10: Diagram of estimated confidence intervals (CI) for skewness and kurtosis for O_3 and ln O_3 by site and monitoring years. For normal distribution, the confidence interval should contain zero.

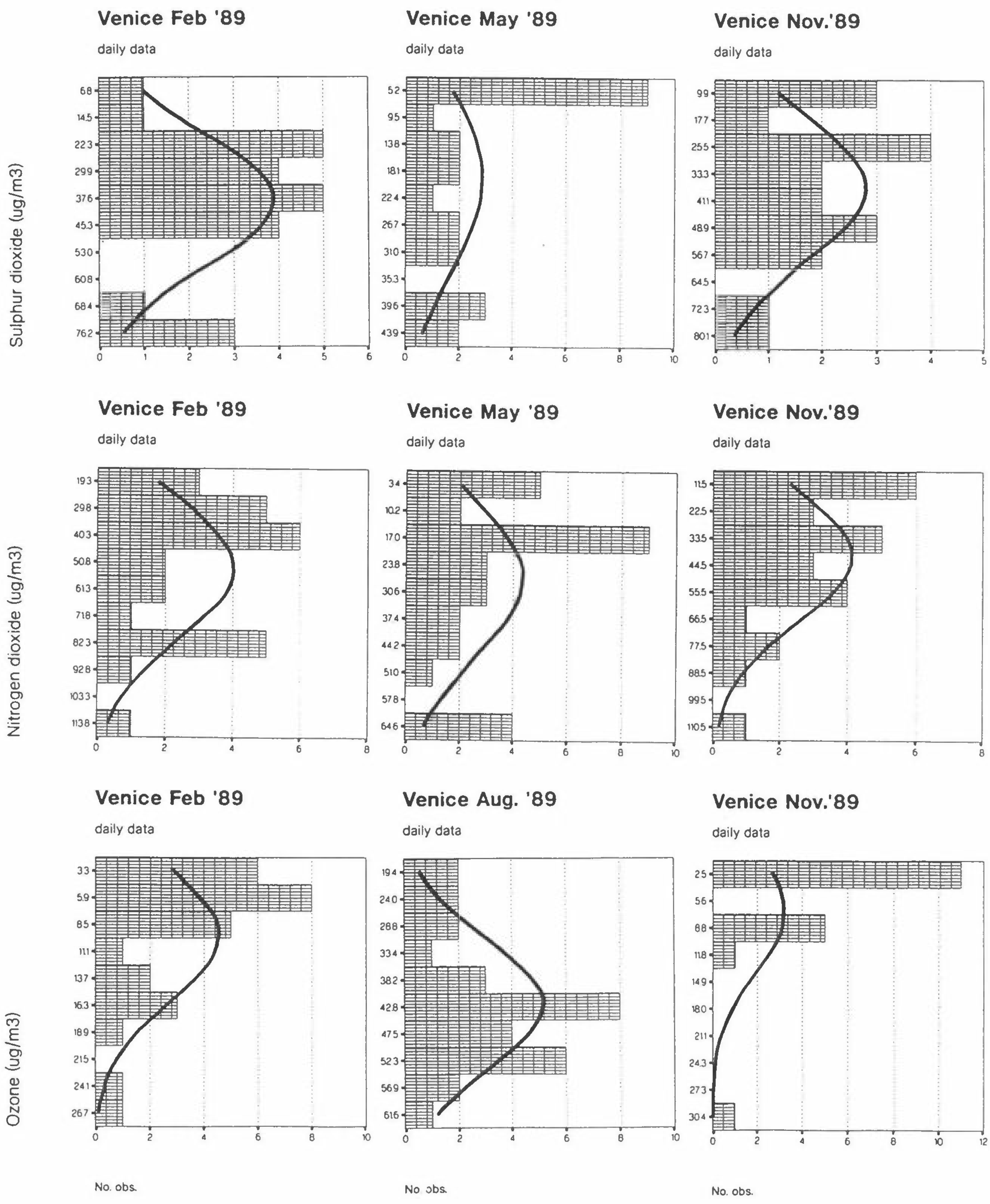


Figure 11: Frequency distributions of monthly observations of gases at site 16 ITA Venice. Three months of un-transformed data are presented.

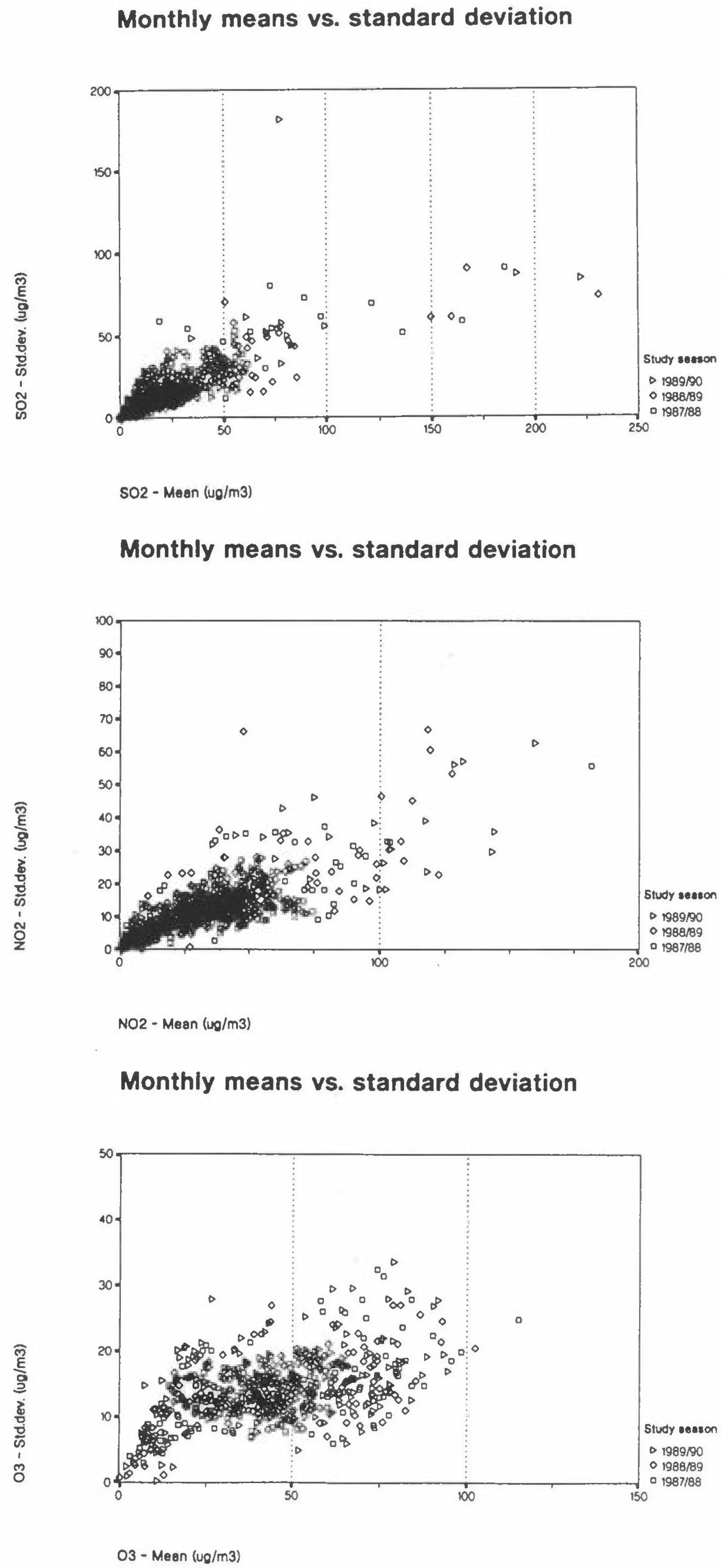


Figure 12: Estimated monthly mean SO_2, NO_2 and O_3 values plotted against estimated standard deviation, for all available daily data.

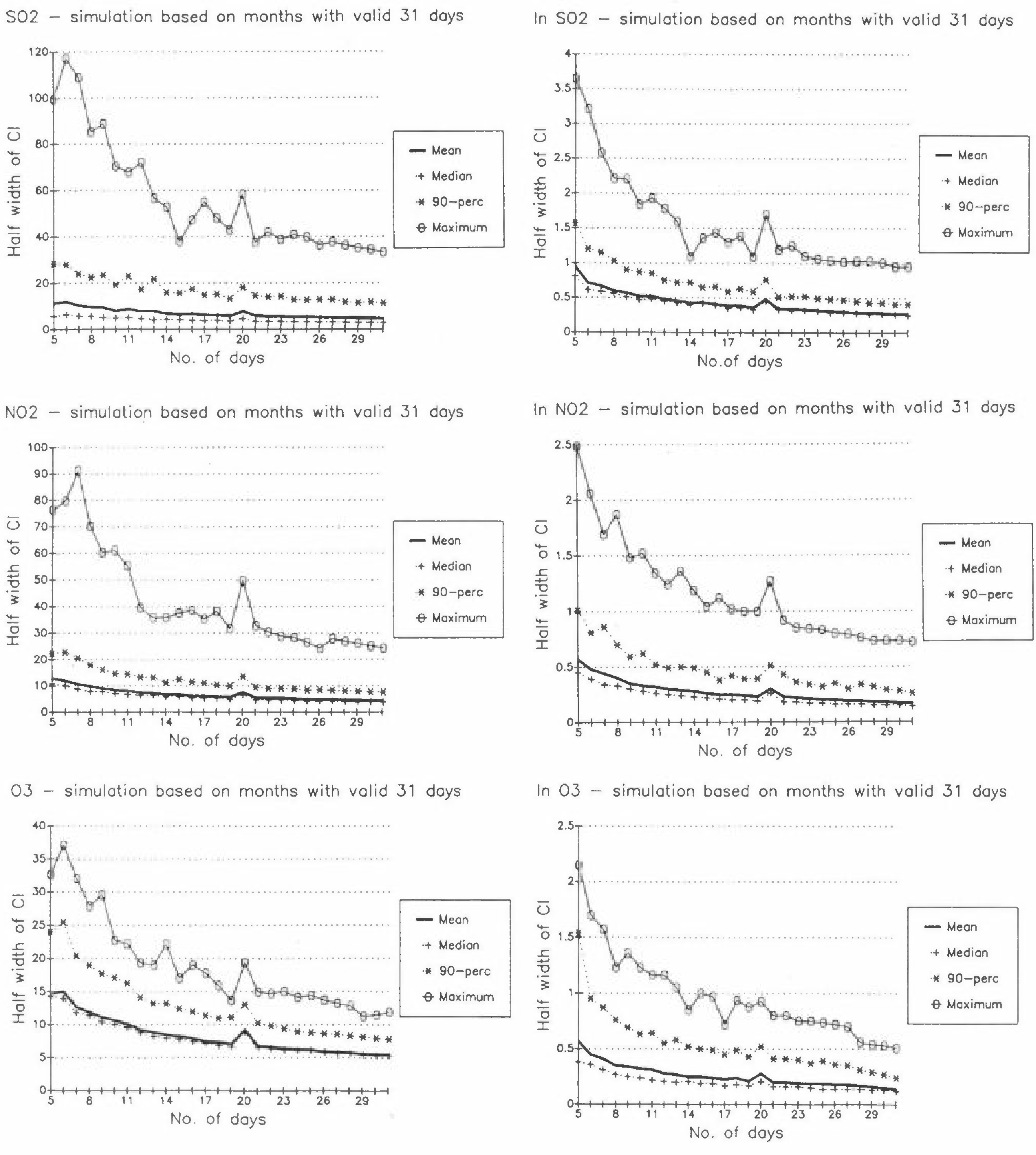


Figure 13: Simulated half width of confidence intervals for monthly means based on decreasing number of observations. Basis for the simulation were all months with 31 valid days. The missing values were allocated to days at random, independently for each sample size.

ANNEX 1

Monthly and yearly results of the third year

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

	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				
Date	Temp C	Rh %	Tow hours	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
Sep89	15.3	80.	448.	106.	55.1	23.0		50.4	5.56	6.34	.68	.56	38.0		.64			.70
	d	d	d	d	m	m		d	m	m	m	m	m		m			m
	100%	100%	100%	100%				100%										
Oct89	10.7	81.	297.	141.	40.9	38.0		27.8	6.92	3.72	1.98	5.80	21.1		1.08			2.12
	d	d	m	d	m	m		d	m	m	m	m	m		m			m
	100%	100%		100%				100%										
Nov89	1.7	85.	242.	63.	80.0	37.0		23.7		33.60		8.80			5.60			1.44
	d	d	m	d	m	m		d		m		m			m			m
	100%	100%		100%				100%										
Dec89	1.5	83.	169.	32.	91.5	41.0		15.9	4.60	10.70	1.47	12.60	50.0		2.38			.24
	d	d	m	d	m	m		d	m	m	m	m	m		m			m
	100%	100%		100%				100%										
Jan90	1.5	84.	220.	69.	71.2	40.0		18.4	4.74	25.00	.23	26.00	83.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Feb90	5.5	73.	170.	137.	52.9	40.0		37.7	5.65	3.00	.91	3.00	30.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Mar90	7.9	82.	166.	147.	48.9	35.0		17.3	6.12	6.70	2.05	4.90	52.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Apr90	8.2	70.	275.	165.	68.4	31.0		44.8	3.88	2.70	1.14	1.50	29.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
May90	15.3	60.	92.	289.	50.5	31.0		28.4	4.75	2.67	1.80	1.00	48.2					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Jun90	17.4	66.	171.	200.	43.9	35.0		53.2	5.27	1.33	.22	1.00	35.7					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Jul90	18.7	59.	77.	259.	50.4	23.0		10.6	6.83	3.00	.22	2.00	60.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Aug90	19.8	64.	228.	240.	43.1	37.0		52.6	5.53	1.33	1.14	1.00	48.1					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Mean	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
	d	d	m	d	m	m		d	m	m	m	m	m		xm			xm
	100%	100%		100%				100%										

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

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	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
Sep89	11.6	84.	532.		13.9	8.0		103.8	4.86	3.39	2.93	.69	16.2		.75			2.17
	d	d	d		m	m		d	m	m	m	m	m		m			m
	100%	100%	100%					100%										
Oct89	7.9	78.	331.		11.9	9.0		33.7	6.47	1.33	2.25	2.60	13.0		17.13			
	d	d	m		m	m		d	m	m	m	m	m		m			
	100%	100%						100%										
Nov89	-.1	80.	208.		24.9	17.0		36.2	4.60	2.00	.56	1.80	18.0					
	d	d	m		m	m		d	m	m	m	m	m					
	100%	100%						100%										
Dec89	.0	80.	175.		15.0	11.0		57.7	5.26	.67	.23	.60	12.0		.50			.07
	d	d	m		m	m		d	m	m	m	m	m		m			m
	100%	100%						100%										
Jan90	-.4	79.	160.		17.5	11.0		22.9	6.69	2.00	.68	1.70	22.0					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Feb90	3.2	70.	124.		29.7	10.0		87.6	6.92	2.70	.91	4.80	41.0					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Mar90	5.0	72.	208.		81.3	10.0		29.0	5.24	3.00	1.36	2.70	23.0					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Apr90	4.8	80.	353.		25.1	9.0		72.0	3.88	2.67	1.80	1.00	29.0					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
May90	11.6	71.	287.		19.3	4.0		39.5	3.80	2.67	1.80	1.00	52.6					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Jun90	13.7	76.	365.		21.8	6.0		75.0	4.28	1.00	1.14	1.00	34.8					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Jul90	14.5	71.	309.		29.5	5.0		53.1	4.60	.33	.68	1.00	24.8					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Aug90	15.9	72.	353.		17.1	6.0		92.9	4.08	.33	1.36	1.00	26.6					
	d	d	d		m	m		d	m	m	m	m	m					
	100%	100%	100%					100%										
Mean	7.4	76.	3405.		25.6	8.8		703.4	4.35	1.85	1.42	1.61	26.7		3.50			1.42
	d	d	m		m	m		d	m	m	m	m	m		xm			xm
	100%	100%						100%										

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

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	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
Sep89	15.3	77.	315.	114.	59.6	62.0		53.9	6.62	7.32	.11	1.05	44.7		.99			.73
	d	d	d	d	m	m		d	m	m	m	m	m		m			m
	100%	100%	100%	100%				100%										
Oct89	9.8	79.	259.	24.	64.9	38.0		17.1	4.77	29.00	1.58	2.30	112.0		1.75			3.39
	d	d	m	d	m	m		d	m	m	m	m	m		m			m
	100%	100%		100%				100%										
Nov89	1.8	85.	253.	51.	181.4	50.0		55.6	4.73	10.30	.56	2.80	110.0		8.37			3.04
	d	d	m	d	m	m		d	m	m	m	m	m		m			m
	100%	100%		100%				100%										
Dec89	1.3	84.	211.	24.	80.1	32.0		34.6	4.30	5.70	.68	4.20			6.11			5.29
	d	d	m	d	m	m		d	m	m	m	m			m			m
	100%	100%		100%				100%										
Jan90	1.0	82.	141.	45.	67.9	37.0		9.1	4.37	24.70	2.73	8.80						
	d	d	d	d	m	m		d	m	m	m	m						
	100%	100%	100%	100%				100%										
Feb90	3.7	78.	212.	94.	42.3	31.0		47.4	5.39	6.70	1.14	3.80	42.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Mar90	7.7	64.	137.	139.	90.9	45.0		12.8	4.80	25.30	3.41	5.90	135.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Apr90	8.3	65.	107.	156.	66.4	21.0		35.5	4.25	7.67	1.80	7.00	98.6					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
May90	15.3	55.	42.	276.	59.8	28.0		8.3	3.93	19.30	18.00	14.00	360.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Jun90	17.1	67.	150.	159.	74.3	26.0		72.1	6.93	5.00	.45	1.00	107.0					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Jul90	18.0	60.	70.	249.	66.6	22.0		10.6	4.31	8.70	.22	6.00	98.8					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Aug90	19.3	64.	159.	233.	86.2	40.0		59.6	4.35	6.00	1.36	1.00	75.2					
	d	d	d	d	m	m		d	m	m	m	m	m					
	100%	100%	100%	100%				100%										
Mean	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
	d	d	m	d	m	m		d	m	m	m	m	m		xm			xm
	100%	100%		100%				100%										

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

	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				
Date	Temp C	Rh %	Tow hours	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
Sep89	11.2	84.	555.	153.	6.0	19.0		33.5	4.30	2.60	1.10	1.20	46.4					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
Oct89	6.4	85.	528.	89.	11.0	19.0		29.3	4.30	3.80	1.70	2.50	43.8					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
Nov89	.9	87.	460.	29.	18.0	17.0		65.7	4.40	2.30	.80	.90	32.3					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
Dec89	-4.4	87.	212.	38.	19.0	18.0		58.9	4.40	1.70	.90	1.80	37.1					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
Jan90	-3.1	89.	279.	26.	11.0	16.0		77.6	4.20	2.10	1.30	3.40	48.9					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
Feb90	1.3	84.	445.	39.	17.0	23.0		118.5	4.40	1.40	.80	1.50	27.7					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
Mar90	1.8	77.	280.	161.	12.0	20.0		53.3	4.60	2.10	1.70	3.70	34.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	96%			100%				100%										
Apr90	6.3	73.	276.	272.	17.0	35.0		13.7	4.30	3.20	1.20	1.70	68.6					
	m	m	m	d	m	m		d	m	m	m	m	m					
				100%				100%										
May90	10.0	64.	223.	292.		21.0		22.7	4.50	1.40	.40	.40	27.0					
	m	m	m	d		m		d	m	m	m	m	m					
				100%				100%										
Jun90	13.8	69.	176.	316.		21.0		32.8	4.80	2.50	.20	1.10	26.0					
	m	m	m	d		m		d	m	m	m	m	m					
				100%				100%										
Jul90	16.3	77.	315.	250.		15.0		109.3	4.50	.90	.20	.30	14.0					
	m	m	m	d		m		m	m	m	m	m	m					
				100%														
Aug90	16.4	78.	378.	261.		24.0		41.7	4.60	2.10	.56	1.00	19.0					
	d	m	m	d		m		d	m	m	m	m	m					
	100%			100%				100%										
Mean	6.4	80.	4127.	1926.	13.9	20.7		657.0	4.41	1.88	.85	1.61	31.6					
	m	m	m	d	*m	m		m	m	m	m	m	m					
				100%														

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	9.8	82.	429.	147.	.7	2.6	53.	29.4	4.37	1.16	.41	.39	29.2	.67	.13	.15	.03	.15
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	96%	100%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Oct89	2.7	90.	519.	67.	.8	3.1	44.	50.7	4.55	.38	.27	.36	16.9	.15	.11	.07	.02	.07
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	93%	100%	100%	100%	100%	100%	100%	100%	99%	97%	100%	100%	97%
Nov89	-1.7	91.	333.	22.	1.3	4.1	38.	42.2	4.37	.81	.35	.40	27.6	.40	.16	.09	.02	.10
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	90%	100%	100%	99%	99%	99%	99%	99%	98%	95%	98%	98%	95%
Dec89	-7.9	87.	102.	24.	3.4	5.2	42.	37.2	4.57	.31	.34	.55	16.2	.15	.27	.08	.04	.10
	d	m	m	d	d	d	*d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	96%	61%	100%	98%	98%	98%	98%	98%	95%	94%	96%	96%	94%
Jan90	-7.8	88.	57.	14.	8.2	10.4	31.	77.5	4.55	.29	.36	.34	15.7	.18	.15	.06	.02	.05
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	83%	90%	100%	100%	100%	100%	99%	100%	99%	99%	99%	99%	99%
Feb90	-.4	89.	306.	47.	3.0	5.0	47.	76.6	4.44	.50	.43	.34	21.3	.24	.17	.07	.02	.08
	d	m	m	d	d	*d	*d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	71%	71%	100%	100%	100%	100%	100%	100%	99%	99%	99%	99%	99%
Mar90	-1.5	79.	162.	168.	1.3	4.3	66.	45.2	4.62	.44	.34	.44	16.7	.28	.27	.11	.04	.09
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	93%	100%	100%	98%	98%	98%	98%	98%	97%	97%	98%	98%	97%
Apr90	3.4	73.	144.	211.	1.7	3.5	73.	53.2	4.76	.25	.21	.20	11.0	.12	.13	.07	.02	.02
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	90%	96%	100%	98%	99%	99%	99%	99%	98%	98%	98%	98%	98%
May90	8.1	62.	171.	284.	.4	2.3	72.	24.8	4.65	.48	.22	.12	14.5	.20	.08	.13	.02	.08
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	93%	96%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Jun90	13.0	64.	249.	302.	.5	5.0	60.	64.3	4.55	.55	.15	.16	16.2	.16	.04	.07	.01	.05
	d	m	m	d	d	*d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	60%	96%	100%	97%	97%	97%	97%	97%	96%	95%	97%	97%	95%
Jul90	14.7	75.	411.	232.	.3	3.9	49.	79.6	4.70	.40	.17	.12	12.7	.19	.08	.06	.02	.05
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	61%	96%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Aug90	14.0	80.	459.	196.	.5	4.0	42.	90.0	4.75	.46	.16	.14	11.2	.22	.09	.09	.01	.07
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	96%	100%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Mean	3.9	80.	3342.	1714.	1.8	4.4	52.	670.7	4.57	.47	.27	.28	16.6	.22	.13	.08	.02	.07
	d	m	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%			100%	100%	85%	92%	100%	99%	99%	99%	99%	99%	98%	98%	99%	99%	98%

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	12.1	84.	504.	153.	11.0	34.0		30.3	4.30	3.30	1.20	2.20	58.1					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Oct89	6.4	85.	528.	89.	13.0	34.0		45.5	4.30	5.10	1.90	3.80	59.4					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Nov89	1.5	87.	444.	29.	19.0	31.0		73.7	4.10	1.80	.70	1.60	53.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Dec89	-3.9	86.	222.	38.	30.0	33.0		67.7	4.20	1.70	.90	2.30	56.2					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Jan90	-2.6	86.	264.	26.	19.0	22.0		84.8	4.00	1.60	1.00	4.00	73.8					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Feb90	1.6	88.	438.	39.	18.0	37.0		100.9	4.30	1.10	.60	1.50	33.6					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Mar90	1.8	77.	294.	161.	12.0	40.0		42.0	4.60	1.60	1.40	2.90	40.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Apr90	6.3	73.	276.	272.	19.0	52.0		14.3	4.40	3.60	1.30	1.70	86.5					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
May90	10.3	66.	192.	292.	9.0	41.0		35.7	4.50	1.60	.60	.40	32.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Jun90	14.7	68.	162.	316.	14.0	49.0		19.7	4.30	3.70	.90	1.30	39.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Jul90	16.3	77.	315.	250.	9.0	41.0		109.3	4.40	1.20	.30	.40	16.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Aug90	16.4	77.	378.	261.	11.0	53.0		41.7	4.50	3.50	.37	1.80	22.0					
	d	m	m	d	m	m		d	m	m	m	m	m					
	100%			100%				100%										
Mean	6.8	80.	4017.	1926.	15.3	38.9		665.6	4.26	2.03	.82	1.97	44.0					
	d	m	m	d	m	m		d	m	m	m	m	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				
	Temp C	Rh %	Tow hours	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
Sep89	15.5	81.	444.		9.4	8.8	63.	23.6	3.96	3.04	1.87	.69	79.9	2.15	.23	1.14	.16	.18
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	100%	100%	99%	89%	89%	89%	99%	89%	89%	89%	89%	89%
Oct89	11.0	84.	477.		9.6	13.7	48.	47.5	4.44	1.03	.75	1.23	32.4	.78	.50	.37	.11	.09
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	93%	100%	98%	95%	95%	95%	98%	95%	95%	95%	95%	95%
Nov89	3.0	90.	359.		21.9	17.4	42.	21.3	4.59	1.22	.61	2.78	35.4	.53	1.39	.84	.25	.19
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	100%	100%	99%	92%	92%	92%	99%	92%	92%	92%	92%	92%
Dec89	2.5	92.	387.		27.6	20.3	43.	58.6	4.53	.62	.40	.43	20.7	.23	.16	.18	.04	.06
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		96%	100%	100%	100%	98%	94%	94%	94%	98%	96%	94%	94%	94%	94%
Jan90	4.2	88.	474.		23.4	20.5	34.	34.0	4.51	.73	.49	1.23	32.1	.82	.54	.37	.11	.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%	97%	86%	86%	86%	97%	82%	86%	86%	86%	86%
Feb90	5.7	83.	332.		7.6	13.2	56.	75.2	4.73	.84	.43	4.31	33.6	.49	2.44	.47	.33	.14
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	92%	92%	100%		100%	100%	92%	100%	99%	97%	97%	97%	98%	97%	97%	97%	97%	97%
Mar90	6.5	81.	383.		5.8	10.5	72.	24.7	4.47	1.32	1.02	4.70	55.7	1.64	2.02	.49	.34	.17
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	96%	100%	100%	97%	84%	84%	84%	97%	84%	84%	84%	84%	84%
Apr90	7.1	75.	288.		7.1	6.8	87.	25.7	4.44	2.31	1.20	1.25	48.5	2.11	.59	.97	.19	.24
	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%	90%	90%	90%	98%	90%	90%	90%	90%	90%
May90	13.2	68.	262.		4.6	6.4	88.	54.2	4.22	2.25	4.30	.47	49.7	1.51	.17	.88	.12	.28
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		90%	90%	100%	100%	99%	98%	98%	98%	99%	98%	98%	98%	98%	98%
Jun90	14.7	79.	380.		3.7	6.7	79.	70.0	4.40	1.52	.84	.72	37.1	1.02	.29	.81	.15	.24
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		96%	100%	96%	100%	87%	98%	98%	98%	99%	98%	98%	98%	98%	98%
Jul90	16.5	71.	302.		3.4	6.3	76.	21.4	4.84	.59	.37	.84	20.2	.41	.33	.84	.08	.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%	99%	95%	95%	95%	99%	95%	95%	95%	95%	95%
Aug90	21.3	71.	302.		7.1	8.1	78.	43.5	4.75	1.65	.81	1.57	37.0	.97	.66	1.19	.27	.50
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		93%	100%	100%	100%	99%	97%	97%	97%	99%	97%	97%	97%	97%	97%
Mean	10.2	80.	4390.		11.0	11.6	64.	499.7	4.45	1.35	1.12	1.66	37.9	.94	.80	.67	.18	.19
	d	d	d		d	d	d	d	d	d	d	d	d	d	d	d	d	d
	99%	99%	100%		98%	98%	98%	100%	97%	94%	94%	94%	98%	94%	94%	94%	94%	94%

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

	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
Date	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
Sep89	16.8	70.	292.		10.6	46.7	19.	47.9										
	m	m	d		d	d	*d	m										
			100%		100%	100%	56%											
Oct89	12.3	75.	376.		10.4	44.8	20.	45.0										
	m	m	d		d	d	*d	m										
			100%		100%	100%	51%											
Nov89	4.7	73.	216.		19.9	42.8	14.	50.5										
	m	m	d		d	d	d	m										
			100%		96%	96%	86%											
Dec89	4.2	77.	195.		19.0	40.7	20.	135.8										
	m	m	d		d	d	d	m										
			100%		100%	100%	100%											
Jan90	4.3	76.	251.		13.2	34.3	16.	38.2										
	m	m	d		d	d	d	m										
			100%		100%	100%	90%											
Feb90	7.9	69.	205.		14.0	41.0	26.	103.4										
	m	m	d		d	d	d	m										
			100%		100%	100%	100%											
Mar90	9.4	65.	181.		19.4	45.6	29.	15.7										
	m	m	d		d	d	d	m										
			100%		100%	100%	77%											
Apr90	9.9	63.	190.		22.8	34.4	40.	39.0	4.71	2.89	1.34	1.45	59.6	1.40				
	m	m	d		d	d	d	m	m	m	m	m	m	m				
			100%		100%	100%	86%											
May90	17.5	54.	133.		15.1	36.6	57.	6.7	4.70	2.66	1.36	1.45	45.1	2.33				
	m	m	d		d	d	d	m	m	m	m	m	m	m				
			100%		100%	100%	100%											
Jun90	17.6	67.	262.		5.9	32.1	42.	96.9	4.10	2.48	.78	.59	50.8	.64				
	m	m	d		d	d	d	m	m	m	m	m	m	m				
			100%		96%	100%	80%											
Jul90	20.1	56.	104.		8.9	32.3	54.	47.5	7.27	2.43	.63	2.17	158.5	12.50				
	m	m	d		d	d	d	m	m	m	m	m	m	m				
			100%		100%	100%	80%											
Aug90	21.6	59.	136.		11.0	42.8		28.8	4.83	3.11	1.29	13.01	48.9	2.31				
	m	m	d		d	d		m	m	m	m	m	m	m				
			100%		93%	100%												
Mean	12.2	67.	2541.		14.2	39.5	31.	655.4	4.39	2.63	.93	2.75	75.3	3.62				
	m	m	d		d	d	m	m	xm	xm	xm	xm	xm	xm				
			100%		98%	99%												

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO_2 ug/m3	NO_2 ug/m3	O_3 ug/m3	PRECIPITATION mm	pH	SO_4-S mg/l	NO_3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH_4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	16.2	84.	415.	130.	26.3	48.7		69.2	4.20	1.84	.85	.74	42.6	1.06	.38	.95	.07	.17
	d	d	m	m	*d	*d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			70%	70%		100%										
Oct89	12.6	86.	527.	96.	19.0	46.1		60.4	4.30	2.07	.71	2.34	43.9	1.18	1.13	1.16	.20	.26
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Nov89	5.8	84.	434.	106.	25.9	46.2		32.6	4.40	1.18	.53	1.41	30.2	.74	.70	1.08	.19	.23
	d	d	m	m	*d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			63%	90%		100%										
Dec89	5.2	89.	480.	44.	22.5	50.7		82.3	4.70	1.36	.32	1.97	21.6	.69	.86	.33	.26	.08
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			80%	100%		100%										
Jan90	5.3	91.	604.	28.	19.1	41.6		58.1	4.50	1.32	.52	1.79	32.0	.72	1.12	.61	.14	.31
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Feb90	9.0	81.	356.	90.	19.7	40.7		64.2	4.70	1.73	.56	2.63	60.2	.55	7.12	1.38	.31	.27
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			96%	96%		100%										
Mar90	8.8	83.	465.	111.	19.4	45.9		29.9	4.80	2.58	.73	4.14	49.2	1.92	2.47	1.31	.40	.33
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Apr90	8.9	77.	343.	186.	25.3	38.3		36.0	4.30	2.84	1.41	3.36	58.0	2.12	1.13	1.16	.27	.71
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
May90	15.2	67.	269.	274.	21.5	46.4		20.2	4.02	2.45	1.25	1.04	61.6	1.39	.40	.37	.11	.32
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			96%	90%		100%										
Jun90	15.9	80.	420.	133.	14.2	41.6		113.1	4.33	1.76	.89	.98	36.3	.97	.49	.89	.10	.08
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			96%	100%		100%										
Jul90	17.8	69.	295.	220.	17.3	38.8		50.0	4.34	1.47	.70	.93	34.6	.48	.34	.73	.05	.11
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	90%		100%										
Aug90	19.7	73.	332.	206.	15.8	48.3		81.6	5.87	1.56	.89	1.53	30.6	2.12	.96	1.18	.17	.59
	d	d	m	m	*d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			67%	100%		100%										
Mean	11.7	80.	4940.	1624.	20.3	44.4		697.6	4.44	1.75	.74	1.75	39.0	1.11	1.41	.92	.18	.26
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			89%	94%		100%										

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	16.5	79.	379.	140.	33.3	47.3		69.3	4.50	2.71	.98	1.10	42.2	1.08	.45	2.61	.11	.25
	d	d	m	m	*d	*d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			70%	70%		100%										
Oct89	13.1	79.	420.	122.	43.8	47.4		73.1	4.60	1.87	.59	1.68	36.2	.98	1.05	1.56	.23	.22
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Nov89	5.7	80.	338.	119.	84.0	60.2		20.8	4.90	4.66	.96	7.63	73.2	1.91	2.97	3.11	.96	1.07
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Dec89	5.5	83.	377.	42.	83.2	55.7		85.6	4.50	2.04	.42	2.90	39.8	.87	1.18	.86	.38	.19
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Jan90	6.0	84.	479.	34.	56.3	47.4		55.2	4.40	2.72	.72	13.92	92.9	1.38	1.02	1.44	.31	12.13
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			96%	93%		100%										
Feb90	8.7	75.	255.	96.	54.9	47.4		95.9	4.80	3.05	.46	17.13	87.5	1.07	9.36	1.68	.99	.55
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			85%	92%		100%										
Mar90	9.0	76.	361.	125.	47.9	45.2		34.5	4.80	4.09	.87	7.07	67.4	2.35	3.34	2.42	.56	.53
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			96%	96%		100%										
Apr90	9.5	70.	269.	202.	49.8	41.4		43.3	4.40	4.24	1.40	3.21	71.5	3.02	1.02	2.57	.42	.82
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	90%		100%										
May90	15.5	65.	254.	317.	36.4	45.5		18.0	4.37	3.41	1.81	3.01	58.2	1.94	.96	1.28	.29	.50
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Jun90	16.4	77.	372.	139.	30.6	38.5		93.0	4.58	2.00	.92	.98	32.8	.93	.39	1.26	.14	.08
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Jul90	17.9	70.	289.	255.	25.7	33.0		34.3	4.53	2.22	.92	1.35	40.2	1.00	.52	1.73	.10	.14
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Aug90	20.0	70.	314.	221.	33.9	47.6		73.6	5.73	2.51	1.02	1.88	42.4	1.68	1.24	1.74	.20	.35
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	96%		100%										
Mean	12.0	76.	4107.	1812.	48.5	46.4		696.6	4.60	2.69	.81	5.35	54.6	1.34	2.22	1.72	.38	1.28
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			95%	95%		100%										

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

	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				
Date	Temp C	Rh %	Tow hours	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
Sep89	15.9	76.	346.	140.	30.5	46.3		56.2	4.30	2.00	.80	.64	41.0	1.61	.32	1.17	.09	.20
	d	d	m	m	*d	*d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			66%	60%		100%										
Oct89	12.6	78.	392.	122.	23.4	42.4		59.8	4.30	2.09	.66	2.43	45.1	1.56	1.08	.94	.20	.23
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Nov89	5.3	80.	329.	119.	43.1	55.9		19.8	4.30	2.96	1.02	6.09	46.2	1.72	2.31	1.46	.65	.91
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Dec89	5.1	81.	323.	42.	34.8	44.8		74.9	4.60	1.45	.41	2.18	26.9	.74	1.54	.44	.30	.08
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Jan90	5.2	80.	358.	34.	24.7	41.5		46.1	4.40	2.30	.88	2.41	46.2	1.56	.80	1.46	.24	.71
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Feb90	8.1	71.	192.	96.	22.1	37.1		65.9	6.00	1.67	.57	4.99	50.1	.68	8.19	1.14	.30	.47
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Mar90	8.9	78.	384.	125.	26.5	45.6		23.0	4.50	3.30	.90	5.80	63.9	2.54	2.94	1.90	.42	.81
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	100%		100%										
Apr90	8.7	77.	326.	202.	27.1	33.7		30.6	4.40	2.84	1.28	3.09	58.8	2.61	.87	1.45	.28	.66
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			83%	100%		100%										
May90	14.6	71.	310.	317.	23.0	40.0		18.0	4.07	2.48	1.47	1.20	59.0	1.74	.45	.38	.11	.19
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			93%	100%		100%										
Jun90	15.9	80.	410.	139.	15.0	35.8		142.3	4.15	1.68	1.19	.82	44.3	.92	.27	.72	.08	.08
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			93%	96%		100%										
Jul90	17.4	73.	328.	255.	16.7	34.5		48.1	4.30	1.40	.58	.90	36.3	.52	.45	.71	.05	.10
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			100%	93%		100%										
Aug90	19.7	74.	342.	221.	21.0	43.7		59.8	5.28	2.03	1.03	1.97	38.6	1.47	1.62	2.37	.24	.62
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			96%	100%		100%										
Mean	11.5	77.	4040.	1812.	25.6	41.7		644.5	4.38	1.95	.87	2.22	43.5	1.25	1.67	1.09	.20	.32
	d	d	m	m	d	d		d	m	m	m	m	m	m	m	m	m	m
	100%	100%			94%	95%		100%										

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

	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				
Date	Temp C	Rh %	Tow hours	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
Sep89	12.9	85.	523.	146.	7.1	10.9	47.	140.8	4.40	1.45	.61	.18	33.8	.80	.09	.26		.04
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		96%	96%	100%											
Oct89	8.2	83.	521.	175.	5.2	12.3	35.	65.3	4.84	.43	.36	.14	15.0	.23	.10	.24		.03
	m	m	d	m	d	*d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	64%	100%											
Nov89	-.2	92.	260.	120.	5.9	18.1	24.	43.5	5.50	.40	.18	.11	8.1	.28	.10	.24		.02
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		93%	100%	100%											
Dec89	-1.8	88.	154.	77.	11.0	26.6	22.	43.4	5.71	.42	.17	.16	7.6	.21	.12	.40		.02
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	100%	100%											
Jan90	-3.4	89.	137.	100.	11.5	25.7	31.	30.6	5.31	1.09	.37	.35	16.3	.80	.16	.51		.05
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		87%	100%	100%											
Feb90	3.5	79.	233.	130.	8.2	13.8	49.	148.2	5.10	.55	.41	.59	7.4	.33	.25	.47		.05
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		96%	100%	100%											
Mar90	5.4	77.	299.	165.	6.3	12.0	61.	36.7	5.68	.62	.57	.32	36.0	.63	.12	.55		.03
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	96%	100%											
Apr90	5.3	82.	466.	122.	3.9	10.8	70.	98.6	4.69	1.03	.66	.25	30.6	.46	1.09	.65		.04
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		90%	100%	100%											
May90	12.1	76.	391.	218.	3.1	7.6	78.	101.9	4.93	1.00	.64	.23	22.9	.84	.13	.58		.06
	m	m	d	m	xd	xd	d	m	m	m	m	m	m	m	m	m		m
			100%		19%	19%	100%											
Jun90	13.6	81.	464.	165.	1.6	6.1	74.	174.5	4.60	.77	.48	.16	13.2	.45	.07	.30		.04
	m	m	d	m	xd	xd	d	m	m	m	m	m	m	m	m	m		m
			96%		26%	20%	86%											
Jul90	15.6	75.	371.	263.	2.3	8.4	92.	167.2	4.77	1.04	.49	.20	17.5	.68	.15	.74		.05
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		93%	100%	100%											
Aug90	16.3	76.	385.	259.	1.7	6.2	78.	132.4	4.94	.78	.53	.23	14.5	.62	.16	.34		.10
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	100%	100%											
Mean	7.3	82.	4201.	1940.	6.1	14.3	55.	1183.1	4.77	.86	.49	.25	18.5	.55	.21	.45		.05
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			99%		83%	83%	98%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	22.0	65.	174.		47.6	68.0	36.	12.2	5.93									
	d	d	d		m	*d	*d	m	m									
	100%	100%	100%			60%	63%											
Oct89	16.8	69.	275.		34.3	95.0	14.	47.6	4.44									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		90%	100%	100%	100%										
Nov89	12.5	61.	150.		50.9	73.7	7.	9.4	4.90									
	d	d	d		*d	d	d	d	m									
	100%	100%	100%		66%	76%	76%	100%										
Dec89	11.9	64.	280.		47.4	64.3	4.	8.2	5.00									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		83%	83%	83%	100%										
Jan90	9.6	67.	279.		26.2	40.2	2.	57.6	4.58									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		100%	100%	100%	100%										
Feb90	12.7	68.	285.		15.2	41.3	3.	22.4	4.90									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		92%	92%	100%	100%										
Mar90	12.6	65.	152.		75.5	80.8	20.	62.7	4.45									
	m	m	m		m	m	m	m	m									
Apr90	15.0	70.	256.		36.7	75.5	22.	102.5	5.05									
	m	m	m		m	m	m	m	m									
May90	19.9	68.	140.		25.0	55.5	30.	70.5	4.85									
	m	m	m		m	m	m	m	m									
Jun90	23.1	65.	190.		44.4	90.2	33.	7.0	4.75									
	m	m	m		m	m	m	m	m									
Jul90	26.8	55.	45.		40.2	40.6	50.	5.5	5.10									
	m	m	m		m	m	m	m	m									
Aug90	25.5	58.	41.		18.9	25.5	59.	57.7	5.15									
	m	m	m		m	m	m	m	m									
Mean	17.4	65.	2267.		38.5	62.5	23.	463.3	4.74									
	m	m	m		m	m	m	m	m									

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (14) Casaccia, Italy

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	18.8	74.	321.		3.4		50.	137.8	6.20	.54	.05	.79	19.0					
	d	d	d		xd		xd	d	d	d	d	d	d					
	100%	100%	100%		16%		16%	100%	100%	100%	100%	100%	100%					
Oct89	14.0	73.	345.		7.2	10.3	56.	38.6	6.36	1.00	.16	1.79	36.8					
	d	d	d		d	xd	d	m	m	m	m	m	m					
	100%	100%	100%		87%	19%	87%											
Nov89	10.1	74.	279.		7.2		40.	73.2	5.99	.79	.08	3.59	34.0					
	d	d	d		d		d	m	m	m	m	m	m					
	100%	100%	100%		86%		86%											
Dec89	9.1	75.	346.		7.0		32.	82.8	5.62	.40	.06	2.10	14.0					
	d	d	d		d		d	m	m	m	m	m	m					
	100%	100%	100%		100%		100%											
Jan90	6.7	74.	358.		9.6		38.	43.4	7.08				33.1					
	d	d	d		d		d	m	m				m					
	100%	100%	100%		100%		100%											
Feb90	8.9	73.	364.		10.0	10.0	47.	20.7	4.90				47.4					
	d	d	d		d	xd	d	m	m				m					
	100%	100%	100%		96%	17%	89%											
Mar90	9.7	73.	368.		9.2	10.3	56.	34.5	6.39				74.2					
	d	d	d		d	d	*d	m	m				m					
	100%	100%	100%		96%	77%	61%											
Apr90	10.6	74.	326.		4.2	9.5	68.	149.4	5.16				49.5					
	d	d	d		xd	xd	xd	m	m				m					
	100%	100%	100%		43%	43%	36%											
May90	15.4	72.	332.		4.5	8.1	67.	25.3	4.50				70.0					
	d	d	d		d	*d	d	m	m				m					
	100%	100%	100%		100%	67%	83%											
Jun90	21.0	71.	280.		5.2		79.	.0										
	d	d	d		xd		xd	d										
	100%	100%	100%		13%		10%											
Jul90	24.1	67.	205.		9.1	6.0	93.	.0										
	d	d	d		d	xd	d	d										
	100%	100%	100%		93%	19%	77%											
Aug90	22.8	66.	190.		5.9	5.7	83.	20.4	5.34	3.07	.77	6.40	122.0					
	d	d	d		d	d	*d	d	m	m	m	m	m					
	100%	100%	100%		87%	87%	67%	100%										
Mean	14.3	72.	3714.		7.4	8.3	56.	626.1	5.38	.76	.11	2.11	38.8					
	d	d	d		d	xd	*d	m	m	xm	xm	xm	m					
	100%	100%	100%		76%	27%	68%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	20.8	88.	358.		35.0	143.3	8.	57.8	4.24	4.18	2.69	4.01	94.0	.82	1.44	5.80	.96	.38
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	99%									
Oct89	15.5	86.	439.		66.7	144.1	10.	5.4	3.86	17.00	7.92	8.71	241.0	9.38	2.49	18.43	2.49	1.10
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	93%	100%	100%									
Nov89	9.2	81.	395.		99.3	104.6	11.	51.8	3.94	6.08	2.43	3.50	86.6	2.14	1.42	7.39	1.34	.31
	d	d	d		d	d	d	d	xd	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	37%									
Dec89	4.6	86.	452.		191.4	132.0	12.	10.2	4.37									
	d	d	d		d	d	d	d	d									
	100%	100%	100%		100%	100%	100%	100%	100%									
Jan90	4.9	83.	298.		222.6	159.9	13.	23.0	3.87	9.00	3.58	10.93	135.0	3.85	3.04	10.31	1.79	.84
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	96%	100%	100%									
Feb90	10.2	70.	215.		78.3	128.6	11.	11.8	3.92	4.00	2.05	4.30	78.3	2.29	1.10	5.39	.96	.23
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	96%									
Mar90	13.8	56.	120.		32.2	117.5	10.	24.6	4.91	7.65	3.45	8.10	116.2	1.44	5.29	10.03	1.11	2.72
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	98%									
Apr90	13.1	72.	277.		23.6	118.1	17.	201.0	4.28	2.97	2.17	1.13	53.0	1.58	.50	3.07	.48	.22
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	90%									
May90	20.5	58.	116.		11.0	102.7	31.	129.2	4.11	3.87	2.57	3.46	63.0	1.84	.53	3.85	.65	.23
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		96%	100%	100%	100%	100%									
Jun90	22.4	63.	190.		9.1	100.3	35.	67.4	4.43	4.42	3.48	4.84	94.1	2.46	.96	5.67	.95	.28
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	100%									
Jul90	25.0	57.	80.		6.9	101.8	53.	55.8	6.84	3.98	2.14	2.87	96.2	1.19	2.27	10.14	2.34	.58
	d	d	d		d	d	d	d	xd	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	12%									
Aug90	24.8	61.	96.		5.1	98.1	52.	21.8	3.96	2.86	1.53	.25	51.1	1.66	.27	1.53	.23	.29
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	100%									
Mean	15.4	72.	3036.		65.4	120.9	22.	659.8	4.19	4.26	2.57	3.28	76.5	1.82	1.15	5.33	.92	.41
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		99%	100%	99%	100%	84%									

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	17.2	76.	422.		16.4	37.5	26.	46.7	4.82	1.38	.68	2.88	36.3					
	d	d	d		d	m	d	m	m	m	m	m	m					
	100%	100%	100%		96%		100%											
Oct89	11.7	69.	354.		45.1	80.9	15.	16.0	4.69	8.66	3.84	5.00	123.4					
	d	d	d		xd	xd	d	m	m	m	m	m	m					
	100%	100%	100%		25%	41%	100%											
Nov89	7.1	78.	408.		37.4	40.8	7.	73.0	5.09	1.51	.55	2.22	33.1					
	d	d	d		*d	d	*d	m	m	m	m	m	m					
	86%	83%	83%		63%	86%	60%											
Dec89	3.5	85.	373.		20.2	44.8	7.	9.8	6.18	7.66	2.26	4.00	97.5					
	d	d	d		d	xd	*d	d	m	m	m	m	m					
	100%	100%	100%		96%	38%	51%	100%										
Jan90	2.1	87.	300.		26.9	75.2	8.	7.1	5.04	22.33	4.29	13.00	243.0					
	d	d	d		d	d	d	d	m	m	m	m	m					
	100%	100%	100%		100%	80%	96%	100%										
Feb90	6.1	86.	453.		25.1	55.5	7.	21.4	5.00	1.66	.45	2.00	27.7					
	d	d	d		d	d	d	d	m	m	m	m	m					
	100%	100%	100%		100%	85%	96%	100%										
Mar90	12.1	75.	340.		15.1	35.8	24.	48.0	5.20	8.33	2.03	7.00	114.0					
	d	d	d		d	*d	d	d	m	m	m	m	m					
	96%	96%	100%		96%	70%	93%	100%										
Apr90	13.4	85.	412.		13.0	55.8	41.	77.0	5.40	2.68	.79	3.50	49.1					
	d	d	d		*d	d	d	m	m	m	m	m	m					
	100%	100%	100%		73%	100%	100%											
May90	20.2	77.	296.		15.1	52.3	56.	45.0	5.28	2.66	1.13	3.00	51.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		100%	96%	100%											
Jun90	20.8	84.	372.		20.0	48.8	43.	74.0	6.48	3.00	1.14	2.02	64.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		83%	83%	90%											
Jul90	22.7	73.	161.		15.9	53.8	56.	9.0	6.94	2.10	2.31	6.80	52.2					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		83%	100%	100%											
Aug90	23.1	73.	268.		13.8	55.0	56.	61.0	6.60	4.24	.42	1.02	44.9					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		90%	96%	96%											
Mean	13.5	79.	4148.		20.2	51.0	31.	488.0	5.24	3.70	1.10	3.21	59.1					
	d	d	d		d	m	d	m	m	m	m	m	m					
	98%	98%	98%		84%		90%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	15.9	84.	476.	138.	30.1	65.9	29.	50.7	4.08	2.02	1.05	2.06	58.0	1.44	.87	.20	.12	.13
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	96%											
Oct89	13.1	83.	488.	105.	37.7	56.4	24.	89.8	4.54	1.25	.35	7.17	47.0	.59	3.73	.36	.44	.23
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	87%	100%											
Nov89	6.4	85.	459.	110.	45.8	66.3	11.	44.1	4.33	2.05	.74	9.98	78.0	.85	6.03	.56	.73	.29
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	90%	100%											
Dec89	5.3	89.	545.	38.	35.9	59.0	12.	88.0	4.55	1.31	.31	3.44	34.0	.83	1.82	.08	.22	.18
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Jan90	6.1	89.	593.	22.	49.7	50.9	17.	55.2	4.25	2.11	.46	18.60	106.0	.88	9.68	.60	1.12	.40
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	96%											
Feb90	8.1	79.	308.	78.	37.8	47.3	35.	95.8	4.52	[illegible]	[illegible]	[illegible]	[illegible]	.56	6.97	.52	.85	.31
	m	m	m	m	d	d	d	m	m	[illegible]	[illegible]	[illegible]	[illegible]	m	m	m	m	m
					100%	96%	100%											
Mar90	8.7	80.	395.	133.	27.0	54.8	38.	49.8	5.52	[illegible]	[illegible]	[illegible]	[illegible]	1.19	10.33	1.48	1.29	.53
	m	m	m	m	d	d	d	m	m	[illegible]	[illegible]	[illegible]	[illegible]	m	m	m	m	m
					100%	96%	93%											
Apr90	8.7	76.	311.	226.	23.8	49.4	48.	50.7	4.42	[illegible]	[illegible]	[illegible]	[illegible]	1.25	2.02	.44	.27	.13
	m	m	m	m	d	d	d	m	m	[illegible]	[illegible]	[illegible]	[illegible]	m	m	m	m	m
					100%	96%	100%											
May90	13.6	72.	297.	313.	26.0	61.2	51.	28.1	4.18	1.82	1.04	1.46	55.0	1.39	.41	.32	.07	.21
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					83%	100%	96%											
Jun90	14.7	81.	414.	130.	28.5	53.6	44.	60.7	4.36	2.14	.74	2.52	47.0	1.20	1.52	.40	.17	.31
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	86%	96%											
Jul90	16.8	76.	344.	278.	19.5	49.5	43.	28.4	4.29	2.37	.70	5.82	64.0	1.16	3.45	.60	.44	.17
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	83%											
Aug90	18.5	78.	366.	239.	27.6	65.4	40.	50.7	4.76	1.54	.35	2.70	32.0	1.02	1.61	.20	.17	.16
	m	m	m	m	d	d	*d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	74%											
Mean	11.3	81.	4996.	1810.	32.5	56.7	32.	692.0	4.42	1.79	.54	7.64	59.7	.95	4.20	.45	.51	.26
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					98%	96%	94%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	15.4	87.	500.	131.	9.3	26.5	41.	67.7	5.27	1.66	.76	.68	28.0	1.96	.58	.08	.02	.16
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Oct89	12.2	88.	571.	105.	8.5	32.2	32.	69.8	5.64	1.15	.36	2.49	25.0	1.27	1.40	.08	.17	.17
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Nov89	5.3	88.	454.	97.	14.3	42.1	16.	21.0	6.09	1.73	.49	1.17	28.0	1.61	1.45	.20	.10	.25
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	93%	100%											
Dec89	4.7	88.	392.	34.	10.1	37.7	19.	80.3	5.96	1.18	.34	1.74	23.0	1.36	.97	.08	.10	.06
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Jan90	5.6	85.	489.	27.	9.8	35.6	21.	48.7	6.15	2.43	.63	8.73	66.0	2.94	4.58	.48	.49	.25
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	96%	90%											
Feb90	7.9	77.	287.	78.	8.5	31.0	41.	96.6	5.95	1.22	.36	6.53	42.0	1.40	3.84	.28	.44	.18
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	82%	100%											
Mar90	7.9	78.	361.	132.	7.1	29.0	47.	71.2	6.64	1.73	.45	4.62	42.0	1.60	3.08	.44	.19	1.33
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Apr90	8.4	72.	259.	206.	8.0	20.3	66.	50.7	6.00	1.98	.70	1.49	35.0	2.13	.92	.40	.12	.22
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
May90	13.8	66.	242.	293.	9.5	17.4	82.	39.7	4.38	2.50	1.65	.57	58.0	2.30	.28	.28	.02	.10
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Jun90	15.1	74.	314.	106.	5.3	16.1	64.	69.2	5.20	1.95	.88	.99	31.0	1.95	.67	.28	.07	.20
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Jul90	16.1	71.	283.	230.	4.5	13.1	65.	33.7	5.09	2.50	.87	2.70	45.0	2.60	1.50	.40	.19	.16
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Aug90	18.2	73.	330.	204.	7.1	19.1	64.	57.3	6.03	.90	.35	1.14	18.0	1.32	.62	.08	.05	.08
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	93%	100%											
Mean	10.9	79.	4482.	1643.	8.5	26.5	47.	705.9	5.34	1.63	.60	2.96	35.6	1.78	1.77	.24	.18	.28
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	97%	99%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	15.6	85.	474.	149.	10.9	38.0	41.	73.9	6.25	2.18	1.06	.92	38.0	3.23	.46	.20	.10	.28
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					93%	86%	83%											
Oct89	12.3	87.	542.	112.	9.3	39.3	31.	46.2	5.92	1.34	.36	2.20	26.0	1.46	1.50	.08	.15	.09
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Nov89	5.1	89.	479.	113.	14.7	50.1	14.	24.7	6.18	2.27	.42	2.17	36.0	2.45	1.45	.08	.15	.22
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Dec89	4.8	90.	464.	33.	9.1	39.1	17.	100.9	6.17	1.25	.31	1.70	23.0	1.40	.94	.08	.10	.10
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	93%											
Jan90	5.2	90.	587.	27.	10.3	30.1	22.	42.3	5.68	1.47	.35	1.63	27.0	1.65	.87	.20	.10	.18
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	90%											
Feb90	7.4	83.	400.	80.	9.8	30.1	44.	77.4	5.63	1.34	.32	6.64	42.0	1.30	3.82	.40	.44	.18
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	78%	82%											
Mar90	8.3	81.	417.	126.	10.5	35.1	40.	32.2	5.39	1.98	.35	14.06	77.0	1.26	8.51	.52	1.00	.38
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	93%											
Apr90	8.8	76.	314.	208.	9.1	23.4	63.	27.2	6.19	3.65	1.08	3.34	61.0	3.74	2.09	.44	.19	.67
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
May90	14.2	70.	278.	278.	11.2	24.5	80.	57.4	4.77	2.46	1.41	.96	47.0	2.76	.39	.64	.10	.19
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	93%											
Jun90	15.3	79.	388.	116.	7.4	20.9	58.	44.6	4.66	2.72	1.13	1.28	49.0	2.80	.62	.40	.15	.20
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Jul90	16.7	73.	298.	263.	7.1	25.7	65.	14.5	5.80	3.94	2.02	5.22	66.0	2.51	4.83	.88	.51	.73
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Aug90	18.5	73.	328.	204.	10.0	41.3	67.	27.8	5.14	9.02	.46	11.82	116.0	2.30	6.10	2.24	1.34	.83
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Mean	11.0	81.	4969.	1709.	9.9	33.1	45.	569.1	5.31	2.29	.69	3.58	43.6	2.12	2.09	.40	.28	.26
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					99%	97%	94%											

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

	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
Date	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
Sep89	15.7	81.	442.	136.	9.3	31.2	40.	45.0	5.56	1.92	.76	.96	31.0	1.86	.69	.48	.07	.49
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Oct89	12.6	83.	497.	106.	9.3	28.0	37.	53.2	4.52	1.25	.53	1.53	32.0	.83	.87	.40	.12	.13
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Nov89	5.4	85.	440.	122.	15.5	37.5	17.	23.9	5.18	1.25	.38	.82	21.0	1.11	.48	.36	.07	.09
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	83%											
Dec89	4.7	87.	460.	37.	8.6	32.1	27.	101.8	4.97	.80	.24	2.06	21.0	.52	1.08	.10	.15	.08
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
Jan90	4.9	88.	547.	33.	7.8	23.1	35.	57.0	5.12	.77	.29	1.39	19.0	.56	.76	.48	.12	.08
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	96%	93%											
Feb90	7.6	78.	289.	94.	6.8	17.5	44.	83.7	5.67	1.12	.31	6.50	40.0	.74	4.05	.72	.49	.25
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					92%	100%	92%											
Mar90	8.2	79.	406.	114.	11.4	28.6	39.	37.2	5.78	2.08	.56	6.71	51.0	1.46	3.91	1.12	.51	.24
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					80%	80%	83%											
Apr90	8.2	74.	306.	191.	15.1	25.9	61.	41.8	5.08	3.17	1.09	2.02	53.0	2.72	1.36	1.00	.19	.34
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	100%											
May90	14.6	63.	208.	290.	12.5	25.5	73.	16.2	4.14	2.69	1.79	.75	73.0	2.23	.30	.80	.10	.18
	m	m	m	m	d	d	*d	m	m	m	m	m	m	m	m	m	m	m
					100%	100%	67%											
Jun90	15.2	78.	359.	131.	7.1	23.7	58.	89.9	5.03	1.54	.60	.53	25.0	1.23	.35	.44	.07	.22
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	93%	90%											
Jul90	17.3	67.	231.	261.	7.9	19.3	55.	18.4	4.92	2.30	.88	2.17	42.0	2.07	1.22	.96	.19	.24
	m	m	m	m	*d	*d	*d	m	m	m	m	m	m	m	m	m	m	m
					61%	61%	61%											
Aug90	19.4	66.	239.	183.	10.9	27.0	62.	40.7	5.32	1.47	.55	.71	24.0	1.65	.46	.20	.05	.16
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					90%	87%	90%											
Mean	11.2	77.	4424.	1698.	10.3	26.9	45.	608.8	4.98	1.47	.54	2.37	32.0	1.18	1.41	.51	.19	.20
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					93%	93%	88%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	12.9	74.	347.	184.	6.9	47.9		21.8	4.83	1.94	.53	1.16	30.9	.01	.52	1.81		
	d	d	d	m	d	d		w	w	w	w	w	w	w	w	w		
	100%	100%	100%		100%	100%		100%	100%	98%	98%	98%	100%	98%	98%	98%		
Oct89	8.2	76.	397.	102.	10.1	46.7		75.9	4.38	1.36	.99	1.60	37.5	.52	.68	.98	.14	.17
	d	d	d	m	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%	100%
Nov89	3.9	77.	337.	62.	12.6	48.2	12.	16.2	4.24	2.43	.01	2.90	44.7	.17				
	d	d	d	m	d	d	m	w	w	w	w	w	w	w				
	100%	100%	100%		96%	86%		100%	100%	97%	97%	97%	100%	97%				
Dec89	-1.8	78.	136.	49.	17.3	52.0	12.	34.6	6.37	2.08	.55	3.76	41.5	.83	1.98	3.74		
	d	d	d	m	d	d	m	w	w	w	w	w	w	w	w	w		
	100%	100%	100%		100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%		
Jan90	1.8	80.	322.	26.	13.3	51.6	16.	52.4	4.71	2.03	.65	2.57	38.5	.55	1.44	2.34	.25	.20
	d	d	d	m	d	d	m	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%	100%
Feb90	3.4	83.	409.	41.	5.7	46.7	25.	80.8	4.52	1.49	.80	3.11	39.8	.57	1.47	1.42	.22	.11
	d	d	d	m	d	d	m	w	w	w	w	w	w	w	w	w	xw	xw
	85%	85%	85%		100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	46%	46%
Mar90	4.2	60.	87.	162.	5.7	47.3		8.4	6.45	1.78	.23	2.20	67.7	.07	.75	4.00	.22	.19
	d	d	d	m	d	d		w	w	w	w	w	w	w	w	w	w	w
	83%	83%	83%		100%	100%		100%	97%	94%	94%	94%	100%	94%	94%	94%	94%	94%
Apr90	6.9	67.	191.	176.	3.5	47.2		37.4	4.45	3.01	1.39	2.54	56.5	1.38	1.19	1.97	.29	.23
	d	d	d	m	d	d		w	w	w	w	w	w	w	w	w	w	w
	96%	96%	96%		93%	96%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May90	14.0	57.	118.	318.	6.5	47.9		8.9	6.38	1.82	.90	1.92	41.2	.77	.95	5.00	.31	.71
	d	d	d	m	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%	100%
Jun90	16.5	65.	181.	229.	4.1	45.1		85.2	4.36	1.58	.56	.58	32.2	.46	.35	.93	.10	.05
	d	d	d	m	d	d		w	w	w	w	w	w	w	w	w	w	w
	83%	83%	83%		100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jul90	18.2	60.	107.	278.	3.2	35.6		37.7	4.54	1.07	.44	.42	23.8	.19	.29	.97	.10	.16
	d	d	d	m	d	d		w	w	w	w	w	w	w	w	w	w	w
	93%	93%	93%		96%	100%		100%	100%	97%	97%	97%	100%	97%	97%	97%	97%	97%
Aug90	17.5	69.	209.	214.	4.4	46.1		67.3	4.33	1.64	.57	1.11	36.4	.38	.61	.90	.15	.10
	d	d	d	m	d	d		w	w	w	w	w	w	w	w	w	w	w
	100%	87%	87%		77%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	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
	d	d	d	m	d	d	xm	m	m	m	m	m	m	m	m	m	*m	*m
	95%	94%	94%		96%	98%												

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	11.5	78.	415.		46.0	18.6		1.9	5.50				58.3					
	d	*d	*d		d	d		w	w				w					
	86%	70%	66%		100%	100%		100%	100%				100%					
Oct89	4.7	81.	419.		40.9	18.9		8.7	5.31	2.34	.01	5.46	70.1	3.89	3.54	.97	.35	.88
	d	d	d		d	d		w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%		100%	100%		100%	100%	95%	95%	95%	100%	95%	95%	95%	95%	95%
Nov89	1.0	83.	245.		46.1	24.1		.1										
	d	d	d		d	d		w										
	100%	100%	100%		100%	100%		100%										
Dec89	.3	81.	243.		42.1	21.9		43.6	3.89	2.68	.78	5.63	83.5	.91	2.76	.56		
	d	d	d		*d	d		w	w	w	w	w	w	w	w	w		
	100%	100%	100%		51%	96%		100%	99%	99%	99%	99%	99%	99%	99%	99%		
Jan90	.3	84.	332.		53.9	21.0		70.3	3.94	2.21	.65	5.01	75.5	.89	2.09	.26	.25	.12
	d	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%	100%
Feb90	2.1	87.	376.		45.5	17.8		148.7	4.06	1.99	.47	4.23	61.9	.94	2.08	.39	.28	.10
	d	d	d		d	d		w	w	w	w	w	w	w	w	w	xw	xw
	100%	100%	100%		100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	40%	40%
Mar90	3.9	71.	294.		28.3	12.5		21.6	3.74	5.60	1.84	8.08	141.4	3.30	3.05	1.44	.48	.40
	d	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%	100%
Apr90	7.2	73.	283.		44.2	15.1		12.6	3.73	3.71	1.69	3.79	113.8	1.91	1.53	.56	.22	.18
	d	d	d		d	d		w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%		100%	100%		100%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%
May90	11.7	62.	226.		22.5	11.8		1.6	3.92	36.71	1.92	1.64	347.3	13.59	11.20	11.60	2.30	3.40
	d	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%	100%
Jun90	12.5	69.	307.		33.9	12.0		106.4	4.31	1.56	.39	1.74	39.8	1.48	.86	.35	.12	.99
	d	d	d		d	d		w	w	w	w	w	w	w	w	w	w	w
	100%	100%	100%		100%	100%		100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Jul90	15.8	68.	245.		34.5	9.6		38.7	4.35	1.87	.58	1.13	39.0	.96	.80	.66	.13	.16
	d	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%	100%
Aug90	13.9	74.	339.		61.1	13.9		63.3	4.26	3.07	.86	2.62	61.8	2.47	1.50	.62	.22	.34
	*d	*d	*d		d	d		w	w	w	w	w	w	w	w	w	w	w
	64%	64%	64%		100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	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
	d	d	d		d	d		m	m	m	m	m	m	m	m	m	*m	*m
	95%	94%	94%		95%	99%												

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

	CLIMATE				GASES			PRECIPITATION						PREC. - OPTION				
Date	Temp C	Rh %	Tow hours	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
Sep89	8.7	78.	411.	205.	.6	2.9	40.	60.7	4.28	1.13	.52	.97	34.4	.51	.56	.23	.06	.20
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	86%	86%	86%		100%	100%	100%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Oct89	6.2	84.	496.	111.	.5	3.3	39.	147.4	4.35	.72	.88	1.47	32.0	.57	.71	.15	.08	.17
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	93%	100%	100%	99%	99%	98%	100%	99%	99%	99%	99%	98%
Nov89	1.1	82.	362.	86.	.6	3.6	42.	227.4	4.25	.97	.90	4.41	47.1	.62	2.17	.14	.26	.15
	d	*d	*d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	83%	50%	50%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Dec89	-.9	86.	218.	44.	.4	3.1	47.	107.8	4.41	.74	.36	4.16	34.4	.26	2.92	.14	.36	.20
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	97%	100%	100%	100%	100%	100%	97%
Jan90	2.7	87.	446.	35.	.9	5.2	50.	301.2	4.50	.69	.43	4.00	34.3	.36	2.33	.09	.27	.16
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		96%	100%	100%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Feb90	4.4	87.	489.	44.	1.5	6.2	57.	251.3	4.44	.81	.48	3.85	34.9	.39	2.20	.18	.26	.14
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	96%	96%	96%		100%	100%	100%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Mar90	3.4	70.	226.	163.	1.4	2.2	68.	44.9	4.37	1.22	.71	6.79	51.0	.78	3.62	.26	.45	.29
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		96%	100%	100%	100%	99%	98%	98%	98%	99%	98%	98%	98%	98%	98%
Apr90	4.8	68.	228.	214.	1.1	4.4	71.	64.0	4.08	1.53	1.11	1.84	47.7	1.35	.85	.17	.14	.16
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	100%	100%	100%	97%	97%	97%	100%	97%	95%	95%	95%	95%
May90	11.3	62.	231.	298.	1.0	2.3	72.	20.3	5.51	1.36	.50	1.13	80.0	.95	.58	15.99	.19	.56
	d	d	d	m	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%
Jun90	14.2	75.	401.	183.	.8	1.9	60.	171.0	4.37	1.37	.66	1.14	35.3	.79	.58	.89	.07	.10
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	96%	96%		100%	100%	100%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Jul90	16.3	68.	309.	300.	.6	.8	54.	154.5	4.30	.81	.43	1.07	25.4	.46	.65	.08	.08	.09
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		93%	100%	100%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Aug90	15.7	75.	401.	218.	1.3	1.2	52.	211.7	4.54	.54	.23	1.71	22.7	.23	.94	.07	.11	.10
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%		100%	100%	100%	100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Mean	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
	d	d	d	m	d	d	d	d	d	d	d	d	d	d	d	d	d	d
	97%	94%	94%		98%	100%	99%	100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (24) Stockholm South, 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				
	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
Sep89	13.5	71.	285.	178.	6.7	34.8	41.	27.0	4.76	.89	.10	.76	17.0	.07	.40	.66	.09	.08
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Oct89	8.2	75.	344.	99.	9.4	37.6	30.	47.0	4.51	1.28	.70	.61	29.0	.61	.33	.55	.07	.57
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		96%	100%	100%											
Nov89	3.0	82.	487.	56.	14.3	41.1	14.	40.0	4.37	1.24	.52	.55	31.0	.54	.26	.34	.05	.13
	d	d	d	m	d	d	xd	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	26%											
Dec89	-1.6	79.	370.	36.	16.7	34.8		.2	4.60	1.37	.60	2.08	30.0	.61	1.03	1.05	.11	.05
	d	d	d	m	d	d		m	m	m	m	m	m	m	m	m	m	m
	96%	96%	100%		93%	96%												
Jan90	1.6	80.	443.	27.	12.0	34.2		55.0	4.32	.83	.52	.85	28.0	.30	.42	.23	.06	.09
	d	d	d	m	d	d		m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%												
Feb90	4.4	80.	353.	36.	12.1	33.9		55.0	4.35	.74	.52	.49	25.0	.39	.21	.20	.04	.03
	d	d	d	m	d	d		m	m	m	m	m	m	m	m	m	m	m
	100%	92%	100%		100%	100%												
Mar90	5.0	55.	68.	168.	7.8	34.0	59.	30.0	4.70	.49	.18	.81	15.0	.10	.38	.12	.05	.02
	d	xd	xd	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	38%	35%		96%	93%	77%											
Apr90	7.5	62.	179.	233.	9.1	39.0	62.	15.0	4.25	2.03	1.21	.68	47.0	1.40	.29	.55	.09	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
May90	12.6	53.	120.	304.	4.4	26.9	62.	25.0	4.40	.96	.41	.48	27.0	.38				
	d	d	d	m	d	d	d	m	m	m	m	m	m	m				
	100%	100%	100%		100%	100%	100%											
Jun90	15.6	60.	147.	286.	3.5	22.7	66.	34.0	4.17	1.64	.48	.11	38.0	.60	.09	.39	.06	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jul90	16.4	71.	299.	193.	2.0	16.4	51.	115.0	4.70	.50	.16	.07	13.0	.09	.08	2.46	.03	.02
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		93%	100%	100%											
Aug90	17.6	68.	244.	221.	3.4	24.9	54.	30.0	4.32	.73	.36	.18		.22				
	d	d	d	m	d	d	d	m	m	m	m	m		m				
	100%	100%	100%		100%	100%	100%											
Mean	8.7	70.	3486.	1837.	8.4	31.6	52.	473.2	4.44	.90	.41	.44	23.9	.34	.24	.93	.05	.11
	d	d	d	m	d	d	*d	m	m	m	m	m	m	m	m	m	m	m
	99%	93%	94%		98%	99%	67%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	13.5	71.	285.	172.		49.1		27.0	4.76	.89	.10	.76	17.0	.07	.40	.66	.09	.08
	d	d	d	+m		d		m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%			100%												
Oct89	8.2	75.	344.	99.	8.6	36.7		47.0	4.51	1.28	.70	.61	29.0	.61	.33	.55	.07	.57
	d	d	d	m	d	d		m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		90%	100%												
Nov89	3.0	82.	487.	56.	11.9			40.0	4.37	1.24	.52	.55	31.0	.54	.26	.34	.05	.13
	d	d	d	m	d			m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%													
Dec89	-1.6	79.	370.	36.	15.4			.2	4.60	1.37	.60	2.08	30.0	.61	1.03	1.05	.11	.05
	d	d	d	m	d			m	m	m	m	m	m	m	m	m	m	m
	96%	96%	100%		96%													
Jan90	1.6	81.	443.	27.	9.4	41.9		55.0	4.32	.83	.52	.85	28.0	.30	.42	.23	.06	.09
	d	d	d	m	d	*d		m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		77%	61%												
Feb90	4.4	80.	353.	36.	8.5	32.4		55.0	4.35	.74	.52	.49	25.0	.39	.21	.20	.04	.03
	d	d	d	m	d	d		m	m	m	m	m	m	m	m	m	m	m
	100%	92%	100%		78%	100%												
Mar90	5.0	55.	68.	168.	6.6	41.4		30.0	4.70	.49	.18	.81	15.0	.10	.38	.12	.05	.02
	d	xd	xd	m	*d	*d		m	m	m	m	m	m	m	m	m	m	m
	100%	38%	35%		70%	70%												
Apr90	7.5	62.	179.	233.				15.0	4.25	2.03	1.21	.68	47.0	1.40	.29	.55	.09	.04
	d	d	d	m				m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%															
May90	12.6	53.	120.	304.				25.0	4.40	.96	.41	.48	27.0	.38				
	d	d	d	m				m	m	m	m	m	m	m				
	100%	100%	100%															
Jun90	15.6	60.	147.	286.				34.0	4.17	1.64	.48	.11	38.0	.60	.09	.39	.06	.04
	d	d	d	m				m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%															
Jul90	16.4	71.	299.	193.				115.0	4.70	.50	.16	.07	13.0	.09	.08	2.46	.03	.02
	d	d	d	m				m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%															
Aug90	17.6	68.	244.	221.				30.0	4.32	.73	.36	.18		.22				
	d	d	d	m				m	m	m	m	m		m				
	100%	100%	100%															
Mean	8.7	70.	3486.	1831.	10.3	40.2		473.2	4.44	.90	.41	.44	23.9	.34	.24	.93	.05	.11
	d	d	d	m	xd	xd		m	m	m	m	m	m	m	m	m	m	m
	99%	93%	94%		42%	35%												

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (26) Aspvreten, Sweden

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	11.9	77.	345.	163.	1.1	4.3	56.	19.8	4.28	.82	.51	.55	27.3	.29	.35	.12	.05	.06
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					100%	86%	86%											
Oct89	7.4	81.	437.	108.	2.1	5.2	49.	32.6	4.17	1.32	.91	.71	41.7	.74	.43	.24	.07	.11
	m	m	m	m	d	d	*d	m	m	m	m	m	m	m	m	m	m	m
					93%	100%	61%											
Nov89	1.9	87.	405.	63.	2.0	7.1		44.9	4.37	.81	.39	.43	25.2	.38	.27	.06	.03	.04
	m	m	m	m	d	d		m	m	m	m	m	m	m	m	m	m	m
					100%	83%												
Dec89	-2.2	86.	292.	43.	1.9	7.2	34.	25.9	4.32	.79	.61	.87	29.1	.33	.58	.09	.08	.06
	m	m	m	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
					96%	100%	87%											
Jan90	1.0	88.	480.	30.	2.4	7.6	43.	33.5	4.29	1.04	.77	1.44	35.3	.45	1.19	.17	.15	.09
	m	m	m	m	d	d	d	d	d	m	m	m	m	m	m	m	m	m
					100%	100%	100%	100%	98%									
Feb90	3.6	88.	451.	43.	3.8	8.7	45.	43.8	4.41	.79	.73	.89	28.7	.56	.68	.18	.09	.09
	m	m	m	m	d	d	d	d	d	m	m	m	m	m	m	m	m	m
					100%	100%	92%	100%	99%									
Mar90	5.3	68.	99.	172.	1.8	4.8	72.	14.8	4.71	.55	.30	.74	16.9	.25	.57	.12	.08	.06
	m	m	m	m	d	d	*d	d	d	m	m	m	m	m	m	m	m	m
					90%	100%	70%	100%	100%									
Apr90	6.0	70.	179.	202.	2.7	4.3	75.	13.7	4.46	2.35	1.09	.42	41.7	1.89	.30	.63	.10	.15
	m	m	m	m	d	d	d	d	d	m	m	m	m	m	m	m	m	m
					96%	83%	96%	100%	99%									
May90	10.9	63.	97.	299.	1.5	2.9	75.	11.8	4.08	2.53	.75	.51	57.3	.98	.32	.36	.08	.20
	m	m	m	m	d	d	*d	d	*d	m	m	m	m	m	m	m	m	m
					93%	90%	67%	100%	70%									
Jun90	14.0	67.	193.	257.	1.0	2.5	78.	23.6	4.37	2.22	.71	.41	38.2	1.18	.26	.82	.15	.09
	m	m	m	m	d	d	d	d	d	m	m	m	m	m	m	m	m	m
					90%	100%	86%	100%	100%									
Jul90	15.7	73.	173.	204.	1.3	1.4	51.	65.3	4.54	.53	.21	.23		.18	.18	.05	.01	.39
	m	m	m	m	d	d	xd	d	d	d	d	d		d	d	d	d	d
					100%	100%	48%	100%	100%	100%	100%	100%		98%	93%	93%	93%	93%
Aug90	16.2	72.	318.	233.	2.3	2.1	66.	12.6	4.80	.38	.25	.41		.22	.30	.08	.04	.06
	m	m	m	m	d	d	d	d	d	d	d	d		d	d	d	d	d
					100%	90%	100%	100%	100%	94%	94%	94%		94%	94%	94%	94%	94%
Mean	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
	m	m	m	m	d	d	*d	m	m	m	m	m	m	m	m	m	m	m
					96%	94%	74%											

ECE-PROGRAMME ON EFFECTS ON MATERIALS   SITE: (27) Lincoln Cathedral, United Kingdom

Date	C L I M A T E Temp C	Rh %	Tow hours	Sun hours	G A S E S SO2 ug/m3	NO2 ug/m3	O3 ug/m3	P R E C I P I T A T I O N mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	P R E C. - O P T I O N NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	15.0	76.	374.		13.5	35.4		2.6	3.87	3.70	1.73	7.71	121.1	2.82	1.56	3.15	.34	.36
	d	d	m		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%
Oct89	11.7	84.	446.		17.0	42.2		44.9	4.27	1.57	.26	2.76	33.8	.44	.92	1.06	.11	.19
	d	d	m		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%
Nov89	6.5	93.	655.		17.3	48.9		20.2	3.94	1.61	.29	2.23	36.6	.20	.87	1.28	.13	.06
	d	d	m		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%
Dec89	5.0	95.	722.		19.1	37.3		67.1	4.35	1.02	.36	1.56	24.8	.24	.76	.92	.11	.07
	d	d	m		*d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			70%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Jan90	6.3	94.	684.		16.7	49.6		41.2	4.40	1.17	.24	3.44	32.9	.30	1.36	1.13	.20	.07
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			93%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Feb90	7.0	89.	558.		15.5	32.9		44.5	4.36	1.35	.25	6.46	45.2	.32	3.11	1.21	.41	.19
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			89%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Mar90	8.7	79.	439.		18.5	35.7		7.7	4.59	3.51	.63	8.72	77.5	1.23	3.74	4.94	1.36	.37
	d	d	m		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%
Apr90	8.6	75.	367.		19.9	29.9		11.6	4.42	3.04	1.01	4.84	68.4	1.64	2.52	1.84	.42	.25
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			96%			100%	98%	93%	93%	93%	98%	93%	93%	93%	93%	93%
May90	13.5	68.	342.		11.6	16.6		16.1	3.86	3.13	1.34	2.73	85.6	1.40	.85	1.02	.23	.12
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	93%	93%			100%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Jun90	14.1	77.	403.		10.4	22.4		38.5	3.93	2.23	.79	2.91	60.5	.91	.60	1.25	.21	.10
	d	d	m		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%
Jul90	17.9	67.	260.		11.6	19.7		9.9	4.72	1.97	.63	1.22	31.6	.63	.50	2.13	.15	.09
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			100%			100%	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
Aug90	18.9	68.	260.		15.9	25.8		3.9	4.41	2.39	.54	4.45	51.4	.79	.90	2.16	.35	.25
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			90%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	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
	d	d	m		d	m		d	d	d	d	d	d	d	d	d	d	d
	99%	99%			95%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	16.4		418.		5.8	27.6		36.8	6.30	1.95	.46	2.43	63.2	4.53	2.16	.94	.18	5.02
	*d		+m		d	w		d	d	d	d	d	d	d	d	d	d	d
	56%				100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct89	13.1		539.		2.7	24.2		13.5	5.86	2.92	.12	6.79	94.6	6.22	5.05	1.32	.43	7.36
	d		+m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%				100%			100%	100%	97%	97%	97%	100%	97%	97%	97%	97%	97%
Nov89	7.6		612.		16.5	38.7		19.7										
	d		+m		d	w		+m										
	76%				100%													
Dec89	6.8	93.	640.		14.3	36.2		40.4	5.86	2.04	.44	9.43	60.7	1.62	3.51	1.39	.51	3.22
	d	*d	+m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	64%			80%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jan90	8.1	95.	707.		4.2	22.2		74.6	6.59	1.87	.32	15.59	80.0	1.43	13.05	1.05	.67	.97
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			77%			100%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
Feb90	8.6	92.	578.		2.2	17.8		13.8	6.49	.98	.08	7.31	42.2	.86	6.59	.84	.41	.54
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			89%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar90	9.8	82.	506.		3.5	26.1		54.5										
	d	d	m		d	w		+m										
	100%	100%			100%													
Apr90	10.6	75.	403.		7.2	28.4		25.8	6.32	1.65	.30	6.00	62.7	1.57	4.98	1.25	.51	.58
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			100%			100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
May90	16.9	63.	246.		7.0	24.5		1.5	6.40	4.47	2.83	4.92	104.0	6.46	3.75	2.73	.46	1.01
	d	d	m		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%	100%	100%
Jun90	15.0	84.	497.		7.2	16.9		60.8	4.38	1.86	.69	3.03	57.9	1.46	2.24	1.11	.26	.23
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	83%	83%			100%			100%	100%	99%	99%	99%	100%	99%	99%	100%	100%	99%
Jul90	20.2	71.	417.		7.7	20.0		33.8	6.08	.89	.38	2.99	33.1	.99	2.44	.88	.27	.47
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	96%	96%			100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug90	19.9	79.	432.		4.5	18.1		40.6	5.68	.56	.16	2.07	24.6	.88	1.17	.51	.18	.15
	d	d	m		d	w		d	d	d	d	d	d	d	d	d	d	d
	96%	96%			90%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mean	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
	d	*m	m		d	m		m	d	d	d	d	d	d	d	d	d	d
	91%				94%				82%	81%	81%	81%	82%	81%	81%	81%	81%	81%

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

	CLIMATE				GASES			PRECIPITATION						PREC. - OPTION				
Date	Temp C	Rh %	Tow hours	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
Sep89	13.7				1.5	2.7	51.	79.0	5.20	1.10		15.00		.20	7.80	.10	.70	
	d				d	d	d	d	xw	xw		xw		xw	xw	xw	xw	
	100%				100%	100%	100%	100%	100%	100%		100%		100%	100%	100%	100%	
Oct89	11.6	94.			3.3	4.7	53.	200.2										
	d	d			d	d	d	d										
	100%	83%			100%	100%	100%	100%										
Nov89	7.0	96.			5.8	8.5	43.	76.8										
	d	d			d	d	d	d										
	100%	100%			100%	100%	100%	100%										
Dec89	3.7	98.			9.3	8.8	33.	201.9	4.51	1.51	.02	9.14		.20	5.01	.42	.47	
	d	d			d	d	d	w	w	w	w	w		xw	w	w	w	
	100%	100%			100%	100%	100%	100%	100%	100%	100%	100%		10%	100%	100%	100%	
Jan90	7.0	98.			2.9	6.2	53.	430.0	4.87	.91	.00	6.42			3.79	.37	.36	
	d	d			d	d	d	w	w	w	xw	w			w	w	w	
	100%	100%			100%	100%	100%	100%	100%	100%	23%	100%			100%	100%	100%	
Feb90	6.6	97.			1.2	2.0	66.	276.8	4.83	1.15	.12	11.81		.20	6.96	.38	.68	.40
	d	d			d	d	d	w	w	w	*w	w		xw	w	w	w	xw
	100%	100%			100%	100%	100%	100%	100%	100%	65%	100%		12%	100%	100%	100%	12%
Mar90	10.8	96.			2.3	2.3	70.	191.1	4.96	1.65	.15	21.56		.43	11.23	2.61	1.25	.80
	d	d			d	d	d	w	w	w	w	w		w	w	w	w	xw
	100%	100%			100%	100%	100%	100%	100%	100%	88%	100%		88%	100%	100%	100%	46%
Apr90	12.5	95.			2.8	3.3	73.	116.3	5.93	.94	.10	7.74		.74	3.84	.91	.38	.21
	*d	d			d	d	d	w	w	w	w	w		w	w	w	w	w
	73%	100%			100%	100%	100%	100%	100%	100%	100%	100%		100%	100%	100%	100%	85%
May90	11.8	93.			5.4	3.2	73.	68.4										
	d	d			d	d	d	d										
	96%	100%			100%	100%	100%	100%										
Jun90	13.0	99.			1.6	1.6	64.	169.0										
	d	d			d	d	d	d										
	100%	100%			100%	100%	100%	100%										
Jul90								89.1										
								+m										
Aug90								235.6										
								+m										
Mean	9.8	96.			3.6	4.3	58.	2134.2	4.84	1.18	.06	10.87		.32	6.00	.74	.60	.49
	m	*m			m	m	m	m	*m	*m	xm	*m		xm	*m	*m	*m	xm

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (30) Stoke Orchard, 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				
Date	Temp C	Rh %	Tow hours	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
Sep89			670.		10.5	29.0		52.5	4.00	1.92	.56	1.89		.44	1.08	.87	.12	.09
			d		d	w		w	w	w	w	w		w	w	w	w	w
			86%		83%			100%	98%	98%	98%	98%		98%	100%	100%	100%	98%
Oct89			619.		12.6	33.9		63.3	3.95	1.06	.17	4.10		.13	1.66	.55	.23	.07
			d		d	w		w	w	w	w	w		w	w	w	w	w
			90%		100%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Nov89			460.		16.9	37.8		44.5	3.87	1.22	.17	2.14		.00	1.33	.59	.16	.00
			d		d	w		w	w	w	w	w		w	w	w	w	w
			76%		100%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Dec89			573.		13.8	38.1		193.7	3.92	1.34	.32	4.75		.28	2.49	.56	.31	.01
			d		d	w		w	w	w	w	w		w	w	w	w	w
			100%		100%			100%	99%	99%	99%	99%		99%	99%	99%	99%	99%
Jan90			513.		14.6	32.6		76.2	3.94	1.26	.15	6.90		.47	3.48	.68	.43	.01
			xd		d	w		w	w	w	w	w		w	w	w	w	w
			29%		90%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Feb90			371.		25.9	15.3		91.0	3.77	1.21	.11	10.04		1.53	2.64	.67	.47	1.08
			+m		d	w		w	w	w	w	w		w	w	w	w	w
					100%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Mar90			428.		7.9	28.7		11.6	4.06	2.10	.44	6.17		.01	3.18	1.85	.50	.89
			+m		d	w		w	w	w	w	w		w	w	w	w	w
					90%			100%	100%	100%	100%	100%		100%	83%	83%	83%	100%
Apr90			610.		7.0	24.5		35.1	3.65	2.23	.48	4.10		.56	1.94	.70	.28	.38
			*d		d	w		w	w	w	w	w		w	w	w	w	w
			70%		100%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
May90			709.		8.0	27.1		8.7	3.48	2.93	1.64	2.42		.39	1.45	3.40	.55	.30
			d		d	w		w	w	w	w	w		w	w	w	w	w
			90%		83%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Jun90			345.		10.1	41.6		39.6	3.52	1.06	.14	3.33		.00	1.14	1.03	.22	.18
			d		d	w		w	w	w	w	w		w	w	w	w	w
			100%		93%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Jul90			268.		7.1	20.6		16.5	3.66	1.16	.93			.00	1.12	2.59	.26	.22
			xd		*d	w		w	w	w	w			w	w	w	w	w
			45%		70%			100%	100%	100%	100%			100%	100%	100%	100%	100%
Aug90			307.		8.6	30.6		15.5	4.99	1.25	.02	.52		.00	2.53	2.09	.18	.75
			*d		d	w		w	w	w	w	w		w	w	w	w	w
			67%		77%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Mean			5873.		12.1	30.0		648.2	3.84	1.38	.29	5.05		.44	2.20	.80	.31	.24
			m		d	m		m	m	m	m	m		m	m	m	m	m
					90%													

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	19.9	44.	2.	234.	4.2	44.9		32.8	5.86	1.01	.49	.98	21.7	.56	.40	1.20	.10	.14
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	96%		100%	100%	98%	98%	98%	100%	98%	100%	98%	100%	100%
Oct89	16.4	48.	0.	224.	13.3	42.6		2.9	6.17	1.94	.56	1.08	31.9	.76	1.87	2.11	.32	.30
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	93%	93%	93%	100%	100%	96%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov89	11.7	58.	0.	99.	13.5	24.8		118.6	6.15	1.13	.15	.92	34.3		.65	4.59	.21	
	d	d	d	d	d	d		d	d	d	d	d	d		d	d	d	
	86%	86%	86%	100%	100%	100%		100%	100%	99%	99%	99%	100%		99%	99%	99%	
Dec89			300.	42.	29.5	31.1		41.5	5.56	1.20	.13	.37	16.7	.22	.36	.96	.08	.09
			+m	d	d	d		d	d	d	d	d	d	d	d	d	d	d
				100%	100%	100%		100%	100%	98%	98%	98%	100%	98%	98%	98%	98%	98%
Jan90	5.0	76.	251.	163.	20.4	29.7		24.2	4.07	1.26	1.94	.95	79.1	.40	1.43	.96	.17	.10
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	77%	77%	77%	100%	100%	100%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb90	9.7	71.	281.	196.	11.1	17.3		4.0	6.05	.50	.16	1.12	11.4	.16	1.09	.55	.08	.04
	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%	97%	97%	97%	100%	97%	100%	100%	100%	97%
Mar90	10.7	55.	79.	251.	17.9	19.1		35.7	6.41	1.15	.32	.40	21.0	.52	.31	1.67	.13	.05
	d	d	d	+m	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%
Apr90	10.6	61.	146.	202.	20.3	21.6		34.5	5.95	1.04	.46	.49	26.0	1.08	.52	1.71	.12	.04
	d	d	d	d	d	*d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	53%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May90	17.0	51.	73.	179.	13.7	11.9		11.7	6.13	2.30	1.00	.66	34.3	1.02	.96	2.74	.20	.13
	d	d	d	d	d	*d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	70%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jun90	23.0	45.	5.	357.	11.5	10.1		.0										
	d	d	d	d	d	d		d										
	100%	100%	100%	100%	100%	100%												
Jul90	26.2	43.	12.	370.	14.4	4.7		11.6	5.63	2.12	.85	.42	31.8	1.69	.76	2.23	.41	.46
	d	d	d	d	d	*d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	54%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug90	25.9	44.	11.	331.	13.5	4.9		14.0	6.80	1.66	.78	.75	40.6	.82	1.14	4.15	.44	.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	16.3	54.	1160.	2648.	15.3	22.8		331.5	5.14	1.23	.45	.73	31.7	.65	.65	2.69	.18	.11
	d	d	m	m	d	d		d	d	d	d	d	d	*d	d	d	d	*d
	87%	87%			100%	89%		100%	100%	99%	99%	99%	100%	63%	99%	99%	99%	63%

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	19.5	79.	424.	190.	37.8	56.1		33.0	5.87	19.63	7.34	9.40	96.6	3.52	2.15	9.93		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Oct89	18.7	74.	340.	168.	45.4	47.0		17.1	5.65	18.34	6.62	9.79	70.1	4.99	2.97	8.58		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Nov89	15.6	75.	285.	89.	41.9	44.2		139.5	5.09	4.05	.74	8.05	42.1	.77	3.50	2.82		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Dec89	15.0	66.	170.	100.	33.8	31.0		13.4	7.40	22.90	4.07	8.80	112.4	2.19	1.66	19.16		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Jan90	9.8	73.	359.	108.	59.3	32.1		67.2	6.72	8.93	1.46	6.39	56.4	1.36	2.37	6.31		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		90%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Feb90	13.1	66.	205.	127.	27.0	21.8		42.4	6.82	25.72	3.40	17.20	131.0	5.62	7.55	9.78		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Mar90	13.1	59.	160.	166.	59.1	39.8		46.0	6.85	18.37	4.58	12.81	108.8	2.99	5.80	9.81		
	d	d	d	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%	100%	100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Apr90	11.5	76.	416.	73.	23.4	34.0		234.8	4.23	7.05	3.77	5.55	59.7	2.13	2.89	1.52		
	d	d	d	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%	100%	100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
May90	17.6	66.	276.	225.	44.5	61.3		60.8	5.24	11.05	3.73	3.08	53.6	2.50	.75	5.25		
	d	d	d	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%	100%	100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Jun90	17.4	76.	410.	145.	38.8	46.5		85.5	5.06	13.04	3.11	5.33	63.3	2.54	1.42	6.45		
	d	d	d	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%	100%	100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Jul90	20.9	71.	335.	259.	46.2	46.9		32.1	6.67	25.18	7.19	15.06	133.3	3.28	4.43	16.88		
	d	d	d	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%	100%	100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Aug90	21.8	73.	389.	224.	39.6	40.6		58.9	6.35	40.67	10.27	26.79	211.4	5.21	6.02	25.66		
	d	d	m	d	w	w		d	w	w	w	w	w	w	w	w		
	100%	100%		100%				100%	100%	100%	100%	100%	100%	100%	100%	100%		
Mean	16.2	71.	3769.	1879.	41.4	41.8		830.7	4.71	13.26	3.83	9.00	78.9	2.51	3.28	6.86		
	d	d	m	d	m	m		d	m	m	m	m	m	m	m	m		
	100%	100%		99%				100%										

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	20.2	57.	90.	217.	8.0	27.5		11.2	5.57	.64	.02	.63	18.9	.22	.28	.99	.08	.19
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	93%		100%	100%	88%	88%	88%	100%	97%	91%	100%	92%	100%
Oct89	16.7	61.	152.	206.	6.8	39.3		19.9	6.72	.71	.38	.70	19.2	.23	.79	2.28	.17	.27
	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%	99%	99%	99%	100%	100%	100%	100%	100%	100%
Nov89	11.4	79.	443.	96.	11.0	25.3		183.3	6.38	.21	.06	.64	11.3	.09	.90	2.57	.19	.14
	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%
Dec89	9.4	86.	604.	47.	19.1	26.6		216.9	6.33	.18	.03	.62	7.4	.20	.73	.44	.08	.19
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	93%	93%	93%	100%	100%	93%		100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%
Jan90	6.5	76.	332.	138.	7.0	15.9		54.3	5.88	.24	.06	.63	6.2	.08	.41	.20	.03	.02
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	96%	96%		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb90	11.0	68.	195.	203.	22.3	29.3		.0										
	d	d	d	d	d	d		d										
	100%	100%	100%	100%	100%	100%												
Mar90	9.8	61.	103.	207.	13.7	13.2		10.9	7.06	.71	.29	.66	16.7	.32	1.30	1.45	.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%	100%	94%	100%	100%	100%	100%
Apr90	9.3	65.	196.	183.	11.8	4.5		83.9	6.12	2.22	.80	1.26	12.9	.39	.49	.41	.06	.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%	99%	99%	100%	100%	100%
May90	16.5	50.	39.	286.	17.1	7.0		8.7	6.30	2.17	.64	.72	19.0	.74	1.57	1.30	.14	.15
	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%	98%	98%	98%	100%	98%	100%	100%	100%	100%
Jun90	22.1	43.	3.	354.	15.1	2.2		.0										
	d	d	d	d	d	d		d										
	100%	100%	100%	100%	100%	100%												
Jul90	25.8	44.	11.	331.	19.5	3.3		9.5	6.25	2.17	.98	.71	57.1	1.52	1.09	2.80	.46	.32
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	100%	90%		100%	100%	100%	100%	100%	100%	95%	100%	100%	100%	100%
Aug90	26.3	41.	6.	305.	10.3	2.7		11.8	5.67	1.64	.68	.45	26.7	1.45	.73	1.22	.22	.11
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	100%	100%	100%	100%	87%	100%		100%	100%	100%	100%	100%	100%	96%	96%	96%	96%	96%
Mean	15.5	61.	2147.	2573.	13.5	16.3		610.4	6.20	.60	.20	.72	11.3	.24	.74	1.21	.12	.14
	d	d	d	d	d	d		d	d	d	d	d	d	d	d	d	d	d
	99%	99%	99%	100%	98%	97%		100%	100%	99%	99%	99%	100%	99%	99%	99%	99%	99%

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	13.2	76.	412.	176.	8.0	78.1		15.8	6.52	2.96	.06	.32	50.0	.82				
	d	d	m	m	m	m		w	w	w	w	w	w	w				
	100%	100%						100%	100%	100%	100%	100%	100%	100%				
Oct89	5.1	85.	498.	43.	16.7	24.0		133.5	6.35	4.04	.05	.16	29.9	.34				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Nov89	-2.7	85.	255.	30.	24.0	41.3		77.5	6.27	2.39	.14	.42	29.2	.23				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Dec89	-7.8	86.	86.	20.	39.6	45.8		88.0	6.24	.39	.09	.40	10.9	.29				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Jan90	-5.8	85.	149.	22.	41.0	56.7		55.5	6.20	.90	.11	.30	29.8	.70				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Feb90	-1.4	84.	162.	24.	38.3	62.2		67.1	6.20	1.00	.08	.35	23.8	.47				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Mar90	.7	70.	159.	132.	29.2	31.2		71.1	6.30	2.36	.11	.31	25.7	.56				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Apr90	6.1	66.	203.	173.	21.5	18.8		31.0	6.20	2.50	.12	.21	29.2	.54				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
May90	12.2	62.	139.	278.	32.4	76.3		25.0	6.30	4.97	.20	.58	60.1	.78				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Jun90	14.7	67.	219.	253.	49.3	58.2		105.7	6.27	4.32	.20	.50	54.9	.80				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																
Jul90	17.8	72.	294.	218.	41.6	61.0		61.7	6.00	3.20	.32	.40	43.0	.67				
	d	d	m	m	m	m		+m	m	m	m	m	m	m				
	100%	100%																
Aug90	16.4	74.	318.	223.	27.5	47.5		128.3	6.10	2.00	.17	.25	10.7	.12				
	d	d	m	m	m	m		+m	m	m	m	m	m	m				
	100%	100%																
Mean	5.7	76.	2894.	1592.	30.8	50.1		860.2	6.22	2.56	.14	.33	29.4	.45				
	d	d	m	m	m	m		m	m	m	m	m	m	m				
	100%	100%																

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	12.4	82.	459.	140.	.1	1.6		29.3	4.62	1.68	.41			.29	1.02	.02		
	d	d	m	m	*d	*d		d	d	d	d			d	d	d		
	100%	100%			56%	56%		100%	100%	100%	100%			100%	100%	100%		
Oct89	6.6	83.	474.	85.	.2	2.1		94.5	4.59	.40	.21		45.9	.09	.35	.02		
	d	d	m	m	*d	*d		d	d	d	d		d	d	d	d		
	100%	100%			67%	67%		100%	100%	100%	100%		100%	100%	100%	100%		
Nov89	1.9	87.	447.	31.	.1	3.3		45.8	4.38	.48	.36			.24	.73	.02		
	d	d	m	m	xd	xd		d	d	d	d			d	d	d		
	100%	100%			23%	23%		100%	100%	100%	100%			100%	100%	100%		
Dec89	-2.7	85.	213.	21.	2.1	2.6		28.9	4.57	.81	.46			.21	.83	.05		
	d	d	m	m	xd	xd		d	d	d	d			d	d	d		
	100%	100%			22%	22%		100%	100%	100%	100%			100%	100%	100%		
Jan90	-2.3	88.	333.	21.	2.9	40.8		58.4	4.74	.63	.21	1.36	9.5	.03	1.25	.67	.09	.51
	d	d	m	m	xd	xd		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			22%	19%		100%	100%	100%	100%	100%	88%	100%	100%	100%	100%	100%
Feb90	2.4	88.	426.	42.	.6	11.5		79.6	4.48	.62	.40	1.26	10.8	.22	.42	.34	.07	.38
	d	d	m	m	xd	xd		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			28%	17%		100%	100%	100%	100%	100%	98%	100%	100%	100%	100%	100%
Mar90	2.4	78.	270.	156.	.4	5.6		44.4	4.60	.54	.43	.87	9.7	.29	.60	.46	.06	.46
	d	d	m	m	*d	xd		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			54%	29%		100%	100%	100%	100%	100%	95%	100%	100%	100%	100%	100%
Apr90	5.3	75.	267.	275.				13.3	4.95	1.57	.55	.15		1.00	.41	1.17	.09	.52
	d	d	m	m				d	d	d	d	d		d	d	d	d	d
	100%	100%						100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
May90	9.3	69.	216.	323.				37.2	4.84	.97	.38	.38	12.2	.37	.17	.89	.13	.26
	d	d	m	m				d	d	d	d	d	d	d	d	d	d	d
	100%	100%						100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jun90	13.4	76.	309.	288.				35.5	4.95	1.04	.18	.22	13.1	.07	.32	1.39	.12	.44
	d	d	m	m				d	d	d	d	d	d	d	d	d	d	d
	100%	100%						100%	100%	100%	100%	100%	100%	92%	92%	92%	92%	92%
Jul90	15.5	83.	483.	207.	.1	6.9		24.7	5.73	1.16	.30	.68	18.3	.46	.42	1.69	.11	.55
	d	d	m	m	xd	xd		d	d	d	d	d	d	d	d	d	d	d
	100%	100%			25%	25%		100%	100%	100%	100%	100%	91%	100%	100%	100%	100%	100%
Aug90	15.5	82.	435.	261.				41.1	6.08	.79	.11	.31	14.8	.01	.16	1.04	.05	.36
	d	d	m	m				d	d	d	d	d	d	d	d	d	d	*d
	100%	100%						100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	72%
Mean	6.7	81.	4332.	1850.	.6	6.5		532.7	4.65	.75	.31	.81	19.9	.20	.55	.51	.08	.42
	d	d	m	m	xd	xd		d	d	d	d	*d	d	d	d	d	*d	*d
	100%	100%			25%	21%		100%	100%	100%	100%	62%	75%	99%	99%	99%	62%	60%

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

	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
Date	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
Sep89	22.8	53.	465.	387.	.9	47.1	24.	10.4	6.65	24.50	10.93	5.18	97.5	3.30	3.50	11.38	.16	.27
	d	d	xd	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	6%	100%	96%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Oct89	21.8	60.	93.	363.	.0	59.7	42.	110.1	6.51	7.04	4.41	1.92	58.7	1.36	.89	3.00	.28	.70
	d	d	xd	d	d	d	d	w	w	*w	*w	*w	w	*w	*w	*w	*w	*w
	90%	90%	9%	100%	100%	96%	100%	100%	100%	73%	73%	73%	100%	73%	73%	73%	73%	73%
Nov89	18.1	69.	275.	306.	.1	37.0	33.	267.8	5.62	5.27	1.77	4.90	54.0	.56	3.09	1.64	.52	.42
	d	d	xd	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	40%	100%	100%	100%	96%	100%	99%	92%	92%	92%	99%	92%	92%	92%	92%	92%
Dec89	15.9	79.	424.	304.	6.9	32.4	37.	457.4	5.35	3.38	1.37	3.74	41.6	.42	2.24	1.01	.36	.45
	d	d	d	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	90%	90%	80%	100%	100%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jan90	13.1	68.	134.	324.	19.0	36.1	29.	78.4	5.84	6.96	1.10	5.54	68.4	.30	3.38	2.51	.50	.54
	d	d	d	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	96%	100%	100%	100%	100%	100%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
Feb90	16.2	75.	322.	312.	8.5	23.7	38.	5.1	6.60	10.50	1.10	11.37	156.5	.29	17.74	3.45	.99	.78
	d	d	*d	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	71%	100%	100%	100%	100%	100%	84%	84%	84%	84%	84%	84%	84%	84%	84%	84%
Mar90	16.9	60.	186.	372.	7.9	37.5	25.	52.1	6.11	11.33	2.34	2.88	76.6	.71	2.42	4.60	.45	.30
	d	d	xd	*d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	19%	61%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr90	16.8	60.	150.	228.	3.6	21.8	16.	106.1	6.33	5.86	1.55	4.14	65.7	.49	2.75	3.06	.48	.32
	d	d	xd	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	13%	100%	100%	100%	100%	100%	100%	85%	85%	85%	100%	85%	85%	85%	85%	85%
May90	19.5	62.	124.	291.	8.5	29.6	12.	11.5	5.85	3.50	1.04	1.03	31.6	.31	.61	1.57	.23	.27
	d	d	xd	d	d	d	d	w	w	w	w	w	w	w	w	w	w	w
	100%	100%	16%	100%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Jun90	21.1	64.	167.	259.	8.8	19.4	11.	4.2	7.09									
	d	d	xd	d	d	d	d	w	w									
	100%	100%	23%	100%	100%	93%	100%	100%	100%									
Jul90	24.1	58.	155.	321.	8.6	23.4	13.	.0										
	d	d	xd	d	d	d	d	m										
	100%	100%	12%	100%	100%	100%	100%											
Aug90	25.4	51.	62.	311.	5.6	26.4	64.	.0										
	d	d	xd	d	d	d	d	m										
	93%	93%	3%	100%	100%	100%	100%											
Mean	19.3	63.	3033.	3758.	6.6	32.9	29.	1103.1	5.57	5.31	1.90	3.99	53.2	.59	2.52	1.95	.42	.45
	d	d	xd	d	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	97%	97%	32%	96%	99%	98%	99%											

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (37) Dorset, Canada

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	12.5	84.	514.	209.	3.6	2.0	68.	53.0	4.32	.78	.35	.06	26.0	.26	.04	.08		
	d	d	m	d	d	m	m	m	m	m	m	m	m	m	m	m		
	96%	96%		100%	100%													
Oct89	7.1	84.	499.	120.	6.0	2.0	68.	95.0	4.35	1.05	.70	.11	28.5	.53	.05	.53		
	d	d	m	d	xd	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%		100%	38%													
Nov89	-.9	85.	360.	49.	2.5	2.0	61.	397.0	4.39	.75	.52	.11	25.0	.32	.04	.13		
	d	d	m	d	m	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%		100%														
Dec89	-15.0	80.	14.	118.	3.7	2.0	56.	37.0	4.30	.27	.98	.20	26.5	.26	.09	.20		
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%																
Jan90	-3.5	93.	184.	73.	5.5	2.0	63.	110.0	4.37	.47	.54	.09	21.5	.27	.02	.05		
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%																
Feb90	-8.3	71.	87.	109.	5.6	2.0	60.	49.0	4.30	.77	.83	.13	28.0	.51	.08	.54		
	*d	*d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	75%	75%																
Mar90	-1.3	62.	215.	157.	3.8	2.0	64.	60.0	4.49	.33	.28	.07	15.5	.13	.04	.05		
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%																
Apr90	5.9	77.	229.	187.	2.8	2.0	74.	163.0	4.35	.83	.53	.09	26.7	.41	.04	.22		
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%																
May90	10.0	74.	270.	189.	1.0	2.0	69.	48.0	5.21	.62	.19	.05	10.5	.06	.03	.85		
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%																
Jun90	17.1	80.	221.	222.	2.2	2.0	69.	34.0	4.42	1.40	.63	.26	34.0	.54	.04	.39		
	d	d	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
	80%	80%																
Jul90	19.5	74.	386.	301.	1.4	2.0	64.	54.0	4.27	1.08	.45	.10	34.0	.31	.01	.14		
	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m		
Aug90	17.5	80.	452.	262.	1.3	2.0	58.	3.0	4.16	1.62	.96	.25		.69	.12	.49		
	m	m	m	m	m	m	m	m	m	m	m	m		m	m	m		
Mean	5.1	79.	3431.	1996.	3.0	2.0	64.	1103.0	4.38	.76	.53	.11	25.0	.34	.04	.22		
	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m		

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

	CLIMATE				GASES			PRECIPITATION						PREC. - OPTION				
Date	Temp C	Rh %	Tow hours	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
Sep89	22.2	64.		167.	9.6	15.2	61.	135.1	4.90	.28	.11	.56	10.1	.06	.30	.01	.04	.02
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Oct89	16.4	51.		220.	6.0	27.4	51.	71.9	4.65	.36	.12	.17	10.3	.12	.08	.01	.01	.03
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Nov89	10.9	39.		155.	7.6	32.3	20.	110.7	4.49	.60	.24	.17	20.3	.15	.09	.05	.01	.01
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Dec89	1.6	21.		147.	12.5	36.4	16.	91.2	4.36	.61	.25	.13	20.9	.11	.06	.03	.01	.03
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Jan90	9.1	34.		161.	15.7	37.3	26.	72.7	4.57	.47	.19	.22	15.4	.11	.11	.06	.02	.04
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Feb90	10.7	38.		161.	10.5	29.8	31.	93.8	4.86	.55	.24	1.03	18.7	.28	.65	.14	.08	.05
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Mar90	12.8	42.		191.	11.5	28.1	55.	117.9	4.78	.31	.12	.48	9.8	.17	.09	.03	.01	.04
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Apr90	15.8	46.		238.	7.9	27.1	84.	70.4	4.21	1.09	.44	.40	34.2	1.34	.19	.08	.03	.07
	d	d		m	m	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%	100%											
May90	19.8	57.		233.	9.0	21.7	78.	180.4	4.42	.66	.26	.25	20.2	.19	.08	.07	.02	.02
	d	d		m	m	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%	100%											
Jun90	24.2	64.		302.	6.9	19.8	95.	29.2	4.41	1.54	.51	.29	38.3	1.01	.07	.24	.03	.09
	d	d		m	m	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%	100%											
Jul90	26.8	68.		289.	5.8	14.2	90.	30.7	4.05	1.22	.49	.40	38.6	.33	.16	.10	.03	.05
	d	d		m	m	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%	100%											
Aug90	25.7	69.		157.	7.0	14.0	81.	102.7	4.12	.90	.35	.16	30.0	.25	.04	.03	.01	.03
	d	d		m	m	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%	100%											
Mean	16.3	49.		2421.	9.2	25.3	57.	1106.7	4.45	.61	.24	.36	19.6	.26	.16	.06	.02	.03
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep89	18.0 d 100%	65. d 100%	123. d 100%	156. m	55.8 d 100%	38.3 d 100%	30. d 100%	77.0 m	4.33 m	.94 m	.27 m	.16 m	28.7 m	.18 m	.04 m	.19 m	.03 m	.03 m
Oct89	11.7 d 100%	65. d 100%	174. d 100%	180. m	55.0 d 100%	47.4 d 100%	25. d 100%	39.4 m	4.16 m	1.19 m	.46 m	.37 m	39.2 m	.26 m	.02 m	.29 m	.05 m	.03 m
Nov89	5.5 d 100%	58. d 100%	47. d 100%	88. m	47.2 d 100%	36.6 d 100%	24. d 100%	34.8 m	4.20 m	1.18 m	.47 m	.26 m	36.1 m	.24 m	.06 m	.41 m	.06 m	.03 m
Dec89	-5.8 d 100%	64. d 100%	55. d 100%	80. m	81.1 d 100%	52.0 d 100%	14. d 100%	38.4 m	4.15 m	1.25 m	.44 m	.66 m	40.2 m	.56 m	.07 m	.34 m	.08 m	.03 m
Jan90	3.5 d 100%	63. d 100%	74. d 100%	82. m	70.9 d 100%	41.4 d 100%	17. d 100%	68.1 m	4.15 m	1.36 m	.36 m	.34 m	39.0 m	.33 m	.05 m	.28 m	.05 m	.03 m
Feb90	3.5 d 100%	62. d 100%	110. d 100%	92. m	78.4 d 100%	43.4 d 100%	22. d 100%	70.1 m	3.98 m	1.77 m	.40 m	.41 m	50.2 m	.34 m	.08 m	.30 m	.06 m	.03 m
Mar90	7.5 d 100%	54. d 100%	65. d 100%	156. m	59.5 d 100%	43.3 d 100%	31. d 100%	83.8 m	4.59 m	1.39 m	.54 m	.30 m	44.3 m	.56 m	.03 m	.25 m	.05 m	.02 m
Apr90	11.2 d 100%	54. d 100%	76. d 100%	171. m	48.7 d 100%	44.6 d 100%	43. d 100%	53.6 m	4.12 m	1.72 m	.40 m	.40 m	46.1 m	.56 m	.05 m	.36 m	.06 m	.05 m
May90	15.1 d 100%	56. d 100%	141. d 100%	131. m	43.0 d 100%	36.2 d 100%	45. d 100%	157.2 m	3.97 m	1.49 m	.47 m	.40 m	47.1 m	.25 m	.07 m	.24 m	.04 m	.04 m
Jun90	20.6 m	61. m	88. d 96%	166. m	37.5 m	32.2 m	54. m	107.7 m	3.99 m	1.57 m	.45 m	.44 m	47.0 m	.28 m	.08 m	.36 m	.05 m	.07 m
Jul90	21.7 m	64. m	184. +m	229. m	37.9 m	32.5 m	52. m	167.4 m	3.87 m	2.35 m	.59 m	.76 m	66.9 m	.56 m	.06 m	.36 m	.06 m	.10 m
Aug90	21.7 m	65. m	182. +m	182. m	47.8 m	38.0 m	41. m	69.9 m	6.03 m	7.16 m	.49 m	.65 m	31.8 m	.04 m	.43 m	3.87 m	.38 m	.18 m
Mean	11.2 m	61. m	1319. m	1713. m	55.2 m	40.5 m	33. m	967.4 m	4.08 m	2.00 m	.46 m	.46 m	46.3 m	.35 m	.09 m	.56 m	.08 m	.06 m

ANNEX 2

Monthly and yearly results of previous years
where corrections are made

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep87	23.8	58.	39.		24.9	65.0	23.	41.8	4.92									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		96%	96%	100%	100%										
Oct87	19.1	66.	96.			67.5	19.	90.6	5.05									
	d	d	d			d	d	d	m									
	100%	100%	100%			100%	93%	100%										
Nov87	12.5	65.	74.		17.6	68.8	9.	155.0	6.05									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		96%	96%	96%	100%										
Dec87	10.3	71.	133.		41.3	74.4	3.	21.6	4.15									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		90%	100%	100%	100%										
Jan88	10.1	67.	65.		30.6	71.7	5.	33.6	4.10									
	d	d	d		xd	d	d	d	m									
	100%	100%	100%		29%	87%	87%	100%										
Feb88	9.0	59.	31.		43.3	70.7	17.	56.6	4.60									
	d	d	d		*d	*d	*d	d	m									
	100%	100%	100%		68%	72%	72%	100%										
Mar88	10.8	68.	101.		50.6	69.1	27.	30.6	4.55									
	d	m	d		d	*d	d	d	m									
	100%		100%		93%	67%	96%	100%										
Apr88	13.3	74.	209.		34.9	74.4	33.	83.2	4.30									
	*d	m	+m		d	d	d	d	m									
	66%				90%	100%	100%	100%										
May88	18.3	73.	82.		9.3	65.8	39.	38.0	4.50									
	m	m	+m		*d	d	d	d	m									
					61%	83%	83%	100%										
Jun88	22.5	66.	150.		13.0	64.5	42.	28.8	4.30									
	xd	xd	xd		d	d	d	d	m									
	33%	33%	33%		76%	90%	90%	100%										
Jul88	26.3	57.	30.		25.4	67.7	55.	1.2	4.90									
	d	d	d		d	*d	d	d	m									
	100%	100%	100%		87%	61%	90%	100%										
Aug88	26.6	52.	3.		24.2	71.3	80.	10.4	5.95									
	xd	xd	xd		xd	xd	xd	d	m									
	29%	29%	29%		29%	29%	29%	100%										
Mean	15.4	66.	1013.		29.4	69.2	26.	591.4	4.60									
	m	m	m		*d	d	d	d	m									
					68%	81%	86%	100%										

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (14) Casaccia, Italy

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep87	22.0	71.	298.					27.2	4.30				34.7					
	d	d	d					d	d				d					
	100%	100%	100%					100%	100%				97%					
Oct87	16.6	76.	379.					116.4	5.01	.79	.03	1.02	14.6					
	d	d	d					d	d	d	d	d	d					
	100%	100%	100%					100%	100%	100%	100%	100%	100%					
Nov87	10.5	75.	318.					47.8	4.97	.81	.06	2.70	16.2					
	d	d	d					d	d	*d	*d	*d	d					
	100%	100%	100%					100%	100%	61%	61%	61%	100%					
Dec87	8.1	79.	400.					87.3	5.12									
	d	d	d					+m	m									
	100%	100%	100%															
Jan88	8.3	76.	385.					86.1	5.16	.83	.03	.50	17.1					
	d	d	d					+m	m	m	m	m	m					
	100%	100%	100%															
Feb88	6.5	72.	305.					60.0										
	d	d	d					+m										
	100%	100%	100%															
Mar88	8.3	64.	154.					8.0	5.34	.79	.04	.71	42.1		.48			.06
	d	d	d					d	d	xd	xd	xd	d		xd			xd
	100%	100%	100%					100%	87%	42%	42%	42%	87%		42%			42%
Apr88	12.0	74.	354.					116.9	5.10				22.0					
	d	d	d					d	d				d					
	100%	100%	100%					100%	95%				95%					
May88	16.7	74.	326.					16.5										
	d	d	d					d										
	100%	100%	100%					100%										
Jun88	19.0	71.	240.					73.6										
	d	d	d					d										
	100%	100%	100%					100%										
Jul88	23.9	62.	193.					1.6										
	d	d	d					d										
	100%	100%	100%					100%										
Aug88	23.1	63.	226.					8.8	4.25	.50	.03	5.68	81.0					
	d	d	d					m	m	m	m	m	m					
	100%	100%	100%															
Mean	14.6	71.	3578.					650.2	4.94	.80	.04	1.30	20.7		.48			.06
	d	d	d					m	*m	xm	xm	xm	*m		xm			xm
	100%	100%	100%															

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep87	22.8	74.	229.		36.0	102.9		107.0	4.18									
	d	d	d		d	d		d	m									
	100%	100%	100%		100%	100%		100%										
Oct87	14.8	82.	438.		48.9	103.8		137.0	4.27	10.00		2.00						
	d	d	d		d	d		d	d	m		m						
	100%	100%	100%		83%	87%		100%	76%									
Nov87	10.1	80.	434.		121.2	181.6		80.3	4.08	10.00		4.00						
	d	d	d		d	d		d	d	m		m						
	100%	100%	100%		93%	100%		100%	99%									
Dec87	6.4	78.	376.		185.5	201.1		51.0	4.02	10.00		2.00						
	d	d	d		d	d		d	d	m		m						
	100%	100%	100%		100%	100%		100%	76%									
Jan88	6.6	77.	456.		164.8	124.0		115.0	3.88	11.00		5.00						
	d	d	d		d	m		d	d	m		m						
	100%	100%	100%		80%			100%	100%									
Feb88	7.8	62.	221.		135.8	132.0		22.0	4.02	26.00		13.00						
	d	d	d		d	m		d	d	m		m						
	100%	100%	100%		100%			100%	90%									
Mar88	11.1	52.	151.		43.1	82.6	7.	97.0	4.29	20.00		3.00						
	d	d	d		d	d	d	d	d	m		m						
	100%	100%	100%		93%	74%	80%	100%	98%									
Apr88	14.3	73.	252.		15.6	80.7	12.	68.0	4.00	20.00		3.00						
	d	d	d		d	d	d	d	d	m		m						
	100%	100%	100%		93%	56%	73%	100%	95%									
May88	18.0	76.	322.		25.2	76.6	16.	135.6	4.44	7.00		7.00						
	d	d	d		d	d	d	d	d	m		m						
	100%	100%	100%		100%	96%	93%	100%	93%									
Jun88	20.7	72.	251.		34.2	81.0	20.	159.6	4.30	6.00		4.00						
	d	d	d		m	m	m	d	d	m		m						
	100%	100%	100%					100%	100%									
Jul88	25.4	70.	183.		36.0	85.1	26.	52.2	5.08	27.00		5.00						
	d	d	d		*d	*d	m	d	d	m		m						
	100%	100%	100%		64%	74%		100%	99%									
Aug88	24.9	73.	235.		20.4	58.5	25.	100.0	6.78	23.00		10.00						
	d	d	d		d	d	m	d	d	m		m						
	100%	100%	100%		80%	80%		100%	100%									
Mean	15.3	72.	3548.		72.2	109.2	18.	1124.7	4.22	13.20		4.82						
	d	d	d		m	m	*m	d	m	m		m						
	100%	100%	100%					100%										

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep87			370.					50.0										
			+m					+m										
Oct87	13.7	81.	446.		32.4	23.3	10.	83.4	4.80	1.82	1.03	3.80	41.7					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		100%	93%	96%											
Nov87	10.1	59.	45.		10.1	53.8	6.	87.0	5.55	4.79	.86	7.50	69.6					
	d	d	d		d	*d	d	m	m	m	m	m	m					
	100%	100%	100%		76%	70%	86%											
Dec87	5.6	58.	87.		17.8	58.6	4.	22.0	5.05	3.40	.99	1.90	24.7					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		100%	96%	87%											
Jan88	7.2	78.	385.		27.9	36.1	6.	67.8	5.65	6.04	1.06	2.70	69.6					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		100%	100%	100%											
Feb88	4.6	79.	345.		42.9	36.5	17.	36.0	4.90	5.61	1.03	3.20	64.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		96%	82%	100%											
Mar88	7.0	72.	222.		29.3	34.9	12.	81.2	4.98	5.61	1.03	3.20	46.5					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		100%	93%	93%											
Apr88	15.1	84.	340.		22.7	46.3	24.	39.8	4.88	3.50	.79	3.50	65.6					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		100%	100%	100%											
May88	20.0	83.	345.		23.3	48.2	35.	71.6	5.20	2.38	.64	1.70	52.4					
	d	d	d		*d	*d	*d	m	m	m	m	m	m					
	100%	100%	100%		74%	54%	67%											
Jun88	22.4	86.	366.		10.2	48.5	38.	96.6	5.02	2.08	.64	2.40	51.3					
	d	d	d		d	*d	*d	m	m	m	m	m	m					
	100%	100%	100%		80%	70%	73%											
Jul88	26.9	80.	300.		9.5	39.6	40.	62.4	4.78	3.10	1.14	3.90	76.7					
	d	d	d		*d	d	d	m	m	m	m	m	m					
	100%	100%	100%		74%	93%	93%											
Aug88	26.5	80.	310.		6.1	23.8	38.	16.2	5.12	2.61	.44	4.60	36.7					
	d	d	d		*d	*d	*d	m	m	m	m	m	m					
	100%	100%	100%		54%	58%	70%											
Mean	14.5	76.	3561.		21.1	40.9	21.	714.0	5.02	3.70	.89	3.58	56.6					
	m	m	m		m	m	m	m	m	m	m	m	m					

ECE-PROGRAMME ON EFFECTS ON MATERIALS   SITE: (37) Dorset, Canada

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep87	14.3	83.	490.	166.	2.5	.9	39.	73.2	4.11	1.20	.48	.07	35.0	.40	.01	.26		
	d	d	m	d	d	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%	100%		100%	100%	93%									
Oct87	5.4	83.	465.	111.	3.3	.9	44.	109.8	4.24	1.17	.82	.28	32.0	.45	.15	.46		
	d	d	m	d	d	m	d	d	d	m	m	m	m	m	m	m		
	100%	90%		100%	96%		100%	100%	99%									
Nov87	.3	85.	380.	92.	3.9	.9	43.	70.4	4.43	.58	.54	.10	22.0	.31	.07	.20		
	d	xd	m	d	d	m	d	d	d	m	m	m	m	m	m	m		
	100%	20%		100%	100%		96%	100%	97%									
Dec87	-3.7	89.	243.	42.	3.6	.9	40.	113.8	4.34	.35	.39	.10	15.5	.15	.03	.04		
	d	*d	m	d	d	m	d	d	d	m	m	m	m	m	m	m		
	96%	70%		87%	90%		96%	100%	87%									
Jan88	-9.1	81.	127.	68.	3.6	2.0	49.	90.7	4.25	.53	.60	.09	23.0	.28	.04	.16		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%			100%	100%	88%									
Feb88	-9.4	79.	64.	106.	7.8	2.0	62.	105.3	4.32	.73	.86	.27	29.5	.44	.14	.32		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	96%	96%		100%			100%	100%	83%									
Mar88	-3.6	70.	103.	175.	4.9	2.0	74.	49.3	4.23	1.17	1.06	.25	42.5	.69	.09	.48		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%			96%	100%	94%									
Apr88	4.6	75.	288.	188.	3.5	2.0	73.	98.1	4.14	1.23	.74	.18	40.0	.42	.09	.44		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		83%			90%	100%	94%									
May88	13.3	64.	244.	300.	2.5	2.0	77.	61.4	4.31	1.18	.67	.13	20.5	1.23	.04	.38		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%			96%	100%	96%									
Jun88	14.6	61.	214.	316.	2.4	2.0	76.	31.8	4.43	.74	.36	.08	21.1	.32	.02	.19		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%			100%	100%	86%									
Jul88	20.0	67.	292.	312.	1.3	2.0	74.	60.1	4.30	1.03	.44	.06	26.5	.38	.01	.18		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%			100%	100%	95%									
Aug88	17.9	73.	342.	245.	.2	2.0	59.	97.2	4.28	1.03	.37	.02	28.0	.31	.02	.10		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	100%	100%		100%			90%	100%	96%									
Mean	5.5	75.	3252.	2138.	3.3	1.6	59.	961.1	4.27	.89	.62	.14	27.9	.42	.07	.26		
	d	d	m	d	m	m	d	d	d	m	m	m	m	m	m	m		
	99%	89%		97%			97%	100%	92%									

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

	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
Date	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
Sep87	22.0	81.	440.	200.	5.3	36.5	53.	184.8	4.44	.42	.14	.24	15.9	.12	.05	.01	.02	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Oct87	11.6	69.	276.	264.	.0	29.2	41.	42.3	4.55	.49	.18	.24	14.1	.25	.03	.02	.02	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Nov87	10.6	71.	322.	164.	7.3	33.2	27.	35.2	4.68	.38	.18	1.61	18.5	.07	.84	.02	.10	.02
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Dec87	6.6	70.	256.	145.	11.7	36.7	25.	79.6	4.42	.53	.23	.37	18.7	.13	.12	.01	.03	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jan88	1.2	68.	156.	138.	29.0	32.5	28.	73.9	4.46	.47	.17	.33	17.9	.08	.09	.01	.01	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Feb88	5.3	60.	163.	182.	20.6	27.7	40.	66.8	4.35	.63	.29	.26	24.8	.14	.23	.05	.02	.08
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	96%	96%	96%		96%	96%	96%											
Mar88	9.7	60.	158.	234.	11.7	27.6	56.	40.5	4.23	.89	.37	.51	29.6	.22	.44	.13	.04	.10
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Apr88	14.3	64.	193.	248.	7.5	14.3	68.	74.4	4.33	.65	.24	.17	19.9	.14	.17	.06	.02	.12
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
May88	18.3	71.	312.	256.	4.2	19.2	75.	59.0	4.05	1.28	.50	.20	41.8	.36	.18	.12	.03	.12
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jun88	22.7	69.	264.	306.	6.9	19.9	90.	74.6	3.91	1.96	.68	.21	57.9	.45	.05	.20	.04	.06
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jul88	26.1	71.	316.	236.	6.5	26.9	81.	34.4	4.00	1.14	.56	.20	44.0	.37	.04	.08	.01	.02
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Aug88	26.8	73.	319.	237.	5.3	19.4	65.	81.2	4.50	.48	.18	.72	18.3	.06	.34	.08	.05	.02
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Mean	14.6	69.	3178.	2610.	9.6	26.9	54.	846.7	4.29	.73	.28	.36	24.9	.18	.17	.06	.03	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	99%	99%	99%		99%	99%	99%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4 N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep87	18.1	83.	474.	147.	49.9	32.4	28.	98.9	4.40									
	d	d	d	m	d	d	d	m	m									
	100%	100%	100%		100%	100%	100%											
Oct87	9.2	71.	328.	154.	89.4	48.6	20.	14.9	3.91	2.28	.96	.60	66.0	.65	.01	.83	.11	.05
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Nov87	8.0	66.	1.	114.	36.1	69.8	0.	64.2	4.31	1.14	.26	.27	27.8	.27	.01	.37	.07	.10
	xd	d	d	m	xd	xd	xd	m	m	m	m	m	m	m	m	m	m	m
	3%	100%	100%		3%	3%	3%											
Dec87	2.6	75.	194.	48.	62.9	39.1	18.	45.4	4.05	1.58	.37	.48	41.2	.38	.01	.39	.07	.03
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jan88	-2.0	64.	45.	105.	73.3	43.8	24.	99.7	4.17	1.10	.19	.29	32.6	.16	.19	.10	.03	.08
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Feb88	-.9	67.	89.	84.	58.7	40.0	34.	11.5	4.18	1.56	.73	.59	41.7	.74	.30	.68	.15	.14
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	96%	96%	96%		96%	96%	96%											
Mar88	3.8	65.	0.	133.	39.9	49.0	31.	94.0	4.11	1.34	.43	.33	39.0	.03	.20	.43	.08	.12
	xd	d	d	m	xd	xd	xd	m	m	m	m	m	m	m	m	m	m	m
	3%	100%	100%		3%	3%	3%											
Apr88	10.0	61.	156.	155.	39.9	40.7	46.	24.2	4.02	1.48	.82	.83	46.3	.05	.14	.58	.11	.16
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	96%	100%	100%		96%	96%	96%											
May88	16.1	64.	236.	223.	61.2	46.4	49.	37.3	3.88	1.91	.60	.73	60.7	.04	.14	.47	.09	.14
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jun88	20.6	57.	132.	298.	49.1	43.2	70.	30.5	3.93	1.93	.58	.68	56.7	.43	.04	.55	.09	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jul88	24.5	64.	195.	248.	49.5	43.7	71.	120.1	3.75	2.89	.82	.82	82.8	.53	.04	.44	.08	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	83%	100%											
Aug88	24.5	66.	258.	233.	46.2	36.7	56.	92.4	3.83	1.82	.52	.27	77.7	.59	.03	.44	.06	.02
	d	d	d	m	d	*d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	67%	100%											
Mean	12.3	67.	2111.	1942.	58.1	41.8	42.	733.1	4.00	1.76	.51	.48	54.0	.32	.09	.40	.07	.07
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	83%	99%	99%		83%	79%	83%											

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

	CLIMATE				GASES			PRECIPITATION						PREC. - OPTION				
	Temp	Rh	Tow	Sun	SO2	NO2	O3	mm	pH	SO4-S	NO3-N	Cl	Cond	NH4-N	Na	Ca	Mg	K
Date	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
Sep88	12.6	85.	501.	149.	69.3	7.5	46.	70.3										
	d	d	d	m	d	d	d	m										
	100%	100%	100%		100%	100%	100%											
Oct88	9.8	88.	580.	119.	6.9	9.7	26.	61.5										
	d	d	d	m	d	d	d	m										
	100%	100%	100%		100%	100%	100%											
Nov88	.6	92.	312.	101.	13.4	14.0	27.	73.4										
	d	d	d	m	d	d	d	m										
	100%	100%	100%		100%	100%	100%											
Dec88	.2	94.	650.	30.	8.7	17.6	25.	157.9										
	d	d	+m	m	d	d	d	m										
	100%	100%			100%	100%	100%											
Jan89	-1.6	90.	187.	131.	10.6	32.5	19.	30.5	5.31	1.09	.37	.35	17.8	.80	.16	.51		.05
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	100%	100%											
Feb89	2.0	85.	248.	119.	6.8	23.3	44.	71.1	5.10	.55	.41	.59	14.4	.33	.25	.47		.05
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	100%	100%											
Mar89	6.5	74.	322.	172.	5.0	14.1	55.	50.5	5.68	.62	.57	.32	16.0	.63	.12	.55		.03
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		93%	96%	100%											
Apr89	7.2	79.	422.	100.	7.1	12.0	58.	79.5	4.69	1.03	.66	.25	27.1	.46	1.09	.65		.04
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		100%	100%	100%											
May89	11.6		401.	205.	8.4	9.5	79.	78.4	4.93	1.00	.64	.23	20.9	.84	.13	.58		.06
	m		*d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			54%		100%	93%	100%											
Jun89	12.9	79.	423.	148.	6.5	8.4	77.	171.9	4.60	.77	.48	.16	21.2	.45	.07	.30		.04
	m	m	d	m	d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		96%	100%	100%											
Jul89	16.4	83.	482.	160.	7.9	7.7	62.	229.1	4.77	1.04	.49	.20	22.0	.68	.15	.74		.05
	m	m	d	m	d	*d	d	m	m	m	m	m	m	m	m	m		m
			100%		80%	64%	100%											
Aug89	16.0	80.	455.	195.	4.7	8.4	65.	111.3	4.94	.73	.53	.23	17.4	.62	.16	.34		.10
	m	m	d	m	*d	d	d	m	m	m	m	m	m	m	m	m		m
			100%		54%	77%	100%											
Mean	7.9	84.	4983.	1629.	13.4	14.0	49.	1185.4	4.81	.87	.52	.25	20.4	.59	.23	.53		.05
	m	m	m	m	d	d	d	m	*m	*m	*m	*m	*m	*m	*m	*m		*m
					93%	94%	100%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC. - OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep88	20.6	69.	188.		28.6	96.1	40.	.0										
	xd	xd	xd		xd	xd	xd	m										
	26%	26%	26%		26%	26%	26%											
Oct88	18.7	73.	288.		27.9	90.3	22.	103.2	4.40									
	d	d	d		xd	d	d	d	m									
	100%	100%	100%		48%	93%	93%	100%										
Nov88	9.6	67.	110.		49.8	98.7	8.	8.8	4.55									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		76%	90%	80%	100%										
Dec88	7.5	64.	143.		47.0	84.7	8.	58.4	4.60									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		87%	87%	87%	100%										
Jan89	6.2	67.	128.		85.7	122.5	3.	23.2	4.82									
	d	d	d		xd	*d	*d	d	m									
	100%	100%	100%		29%	61%	61%	100%										
Feb89	9.6	66.	167.		73.8	53.1	15.	27.8	5.06									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		100%	100%	100%	100%										
Mar89	14.0	59.	142.		62.8	55.5	22.	54.2	4.70									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		87%	93%	93%	100%										
Apr89	15.5	66.	209.		49.5	59.2	32.	159.0	5.00									
	d	d	d		d	d	d	d	m									
	100%	100%	100%		83%	96%	90%	100%										
May89	19.6	53.	82.		38.0	70.7	35.	36.8	4.50									
	d	d	d		m	d	d	d	m									
	100%	100%	100%			93%	93%	100%										
Jun89	21.8	58.	135.		33.3	57.0	39.	27.0	5.02									
	d	d	d		m	d	d	m	m									
	100%	100%	100%			83%	83%											
Jul89	25.6	54.	32.		27.5	55.5	46.	2.5	5.10									
	d	d	d		m	xd	xd	m	m									
	100%	100%	100%			48%	35%											
Aug89	26.7	52.	28.		22.2	23.7	66.	8.4	6.05									
	d	d	d		m	d	d	m	m									
	100%	100%	100%			96%	96%											
Mean	16.1	62.	1611.		44.9	69.5	27.	509.3	4.68									
	d	d	d		*m	d	d	m	m									
	93%	93%	93%			80%	78%											

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

	CLIMATE				GASES			PRECIPITATION						PREC. - OPTION				
Date	Temp C	Rh %	Tow hours	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
Sep88	21.0	73.	259.		36.8	112.3	14.	11.2	4.74									
	d	d	d		d	d	xd	d	d									
	100%	100%	100%		90%	96%	30%	100%	98%									
Oct88	17.1	80.	471.		52.6	108.0		192.0	5.09	10.23	6.22	2.17	51.5	1.30	.88	4.45	.52	.36
	d	d	d		d	d		d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		80%	90%		100%	99%									
Nov88	7.8	78.	269.		149.6	127.5	0.	.4										
	d	d	d		d	d	d	d										
	100%	100%	100%		100%	100%	83%	100%										
Dec88	5.2	83.	370.		159.5	119.1	5.	64.0	4.11	11.54	3.25	1.37	48.2	.85	.87	3.90	.66	.13
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	83%	100%	100%									
Jan89	3.2	92.	488.		230.9	81.7	7.	2.0										
	d	d	d		d	d	d	d										
	100%	100%	100%		100%	100%	100%	100%										
Feb89	8.5	81.	284.		167.2	118.2	7.	78.0	4.31	5.86	1.97	2.70	80.5	3.03	1.20	5.85	.75	.27
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	99%									
Mar89	13.4	73.	181.		84.6	103.5	12.	44.0	4.11	8.48	4.61	5.64	129.0	3.01	3.37	9.96	1.44	.34
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	100%									
Apr89	12.9	86.	398.		32.7	67.5	10.	307.4	4.67	8.24	5.02	2.49	47.8	1.26	3.12	3.46	.45	.16
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	96%	100%	99%									
May89	19.3	69.	76.		22.0	76.3	27.	10.4	6.26	31.93	31.00	11.45	180.0	2.15	2.60	19.85	2.98	1.43
	d	d	d		d	d	d	d	*d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	71%									
Jun89	21.4	74.	137.		16.8	75.8	34.	59.4	4.76									
	d	d	d		d	d	d	d	d									
	100%	100%	100%		100%	100%	100%	100%	98%									
Jul89	24.3	81.	289.		13.3	109.2	25.	141.3	4.30	5.68	6.40	3.00	45.8	1.31	.76	3.54	.68	.14
	d	d	d		d	d	d	d	d	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%	100%	99%									
Aug89	24.1	77.	236.		9.4	91.8	28.	93.6	5.74									
	d	d	d		d	d	*d	d	xd									
	100%	100%	100%		83%	83%	70%	100%	13%									
Mean	14.9	79.	3458.		82.7	99.1	16.	1003.7	4.50	8.60	5.41	2.71	57.3	1.51	1.86	4.50	.63	.24
	d	d	d		d	d	d	d	d	*m	*m	*m	*m	*m	*m	*m	*m	*m
	100%	100%	100%		96%	97%	80%	100%	90%									

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep88	21.9	83.	370.		22.4	25.4	36.	26.0	5.06	3.86	1.03	3.40	68.5					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		86%	86%	86%											
Oct88	17.6	88.	459.		12.6	21.6	48.	61.8	5.00									
	d	d	d		*d	d	*d	m	m									
	100%	100%	100%		61%	87%	61%											
Nov88	8.1	84.	387.		44.3	52.7	22.	38.0	5.12	3.23	.81	7.40	61.9					
	d	d	d		*d	d	d	m	m	m	m	m	m					
	100%	100%	100%		73%	90%	100%											
Dec88	6.4	88.	484.		47.8	62.1	11.	49.2	4.58	3.14	.99	2.10	40.5					
	d	d	d		*d	d	d	m	m	m	m	m	m					
	100%	100%	100%		64%	80%	96%											
Jan89	3.5	81.	360.		57.2	71.8	9.	47.0	5.06	20.00	2.38	7.30	195.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		80%	93%	96%											
Feb89	8.7	88.	379.		38.2	53.2	9.	31.0	4.98									
	d	d	d		d	d	d	m	m									
	100%	100%	100%		85%	92%	100%											
Mar89	12.7	86.	466.		24.6	49.2	22.	28.6	4.95	4.29	1.32	3.00						
	d	d	d		d	d	d	m	m	m	m	m						
	100%	100%	100%		80%	90%	100%											
Apr89	15.1	87.	449.		11.9	26.2	32.	56.0	4.32	2.33	.67	4.00	47.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		93%	96%	100%											
May89	20.3	80.	458.		19.2	27.1	43.	42.0	5.30	3.23	1.49	7.70	84.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		77%	100%	96%											
Jun89	18.4	70.	234.		17.0	40.1	45.	56.0	6.32	1.66	.67	3.00	34.0					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		86%	83%	100%											
Jul89	21.5	73.	207.		13.9	18.4	40.	46.0	5.69	2.33	.90	2.00	61.9					
	d	d	d		d	d	d	m	m	m	m	m	m					
	100%	100%	100%		96%	80%	96%											
Aug89	21.2	74.	277.		10.9		43.	54.2	5.28	3.13	1.22	3.78	67.2					
	d	d	d		d		d	m	m	m	m	m	m					
	100%	100%	100%		96%		100%											
Mean	14.7	82.	4530.		25.7	40.7	29.	535.8	4.90	4.69	1.13	4.32	72.0					
	d	d	d		d	d	d	m	m	m	m	m	*m					
	100%	100%	100%		81%	81%	94%											

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

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep88	14.6	74.	438.		7.7	36.0		42.9	4.58	.78	.06	2.18		.07	1.09	.57	.16	.18
	*d	*d	*d		d	w		w	w	w	w	w		w	w	w	w	w
	73%	73%	73%		93%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Oct88	10.7	95.	599.		8.9	34.2		50.4	4.63	1.73	.37	3.60		.38	1.86	1.19	.25	.22
	d	d	d		d	w		w	w	w	w	w		w	w	w	w	w
	87%	87%	100%		80%			100%	87%	100%	100%	100%		92%	100%	100%	100%	92%
Nov88	3.9	97.	513.		21.4	37.4		47.2	4.30	1.88	.75	4.56		1.39	1.62	3.17	.41	.29
	d	*d	d		d	w		w	*w	*w	w	w		w	w	w	w	w
	76%	53%	76%		96%			100%	56%	56%	100%	100%		100%	100%	100%	100%	100%
Dec88	7.4	97.	724.		6.3	37.9		73.7	4.12	2.77	.54	9.44		1.39	4.95	.66	.65	.25
	d	d	d		*d	w		w	w	w	w	w		w	w	w	w	w
	100%	100%	100%		64%			100%	79%	100%	100%	100%		93%	93%	79%	79%	93%
Jan89	6.0	97.	691.		11.8	40.3		24.9	4.78	1.73	.24	2.83		.82	1.22	.86	.16	.09
	d	xd	d		d	w		w	w	w	w	w		w	w	w	w	w
	100%	22%	100%		96%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Feb89	5.8	85.	476.		10.9	40.4		88.9	4.06	3.26	.48	10.02		3.18	3.74	2.08	.53	.43
	d	d	d		d	w		w	w	w	w	w		w	w	w	w	w
	100%	100%	100%		100%			100%	79%	100%	100%	100%		100%	100%	100%	100%	100%
Mar89	7.6	78.	520.		3.1	35.6		46.7	3.80	1.36	.37	3.93		.37	1.74	.63	.22	.09
	d	d	d		d	w		w	w	w	w	w		w	w	w	w	w
	90%	90%	90%		80%			100%	95%	100%	100%	100%		100%	100%	100%	100%	100%
Apr89	6.9	64.	365.		8.2	35.4		62.0	3.75	1.65	.61	2.26		.77	.77	.73	.17	.08
	d	d	d		d	w		w	w	w	w	w		w	w	w	w	w
	100%	100%	100%		83%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
May89	13.8	49.	349.		9.9	24.9		22.0	4.30	.98	.11	1.65		.33	.56	1.46	.09	.17
	d	d	d		*d	w		w	w	w	w	w		w	w	w	w	w
	100%	100%	100%		51%			100%	98%	98%	98%	98%		98%	98%	98%	98%	98%
Jun89	15.9	39.	259.		7.2	28.8		31.8	3.92	1.72	.67	1.09		.35	.39	1.05	.26	.22
	d	d	d		d	w		w	w	w	w	w		w	w	w	w	w
	90%	90%	90%		93%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Jul89			628.		8.9	27.5	89.	69.7	4.24	2.32	.00	2.52		.06	.47	.23	.01	.02
			xd		d	w	m	w	w	w	w	w		w	w	w	w	w
			38%		93%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Aug89			430.		3.5	32.1		68.6	4.85	.58	.01	1.01		.00	.50	.38	.08	.06
			d		d	w		w	w	w	w	w		w	w	w	w	w
			51%		93%			100%	100%	100%	100%	100%		100%	100%	100%	100%	100%
Mean	9.2	75.	6163.		9.1	34.2	89.	628.8	4.13	1.89	.36	4.43		.92	1.85	1.07	.28	.19
	d	*d	d		d	m	xm	m	m	m	m	m		m	m	m	m	m
	76%	67%	84%		85%													

ECE-PROGRAMME ON EFFECTS ON MATERIALS SITE: (37) Dorset, Canada

Date	CLIMATE Temp C	Rh %	Tow hours	Sun hours	GASES SO2 ug/m3	NO2 ug/m3	O3 ug/m3	PRECIPITATION mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	PREC.-OPTION NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep88	12.4	73.	306.	199.	3.8	2.0	47.	103.6	4.02	1.50	.56	.11	22.0	.33	.04	.22		
	d	d	m	d	d	m	d	d	d	d	d	m	m	m	m	m		
	100%	100%		100%	93%		90%	100%	97%	99%	99%							
Oct88	4.7	75.	341.	123.	3.5	2.0	43.	154.5	4.47	.53	.28	.06	23.5	.29	.02	.10		
	d	m	m	d	d	m	*d	d	d	d	d	m	m	m	m	m		
	100%			100%	100%		54%	100%	97%	100%	100%							
Nov88	2.5	77.	342.	32.	5.2	2.0	43.	108.9	4.32	.73	.47	.19	27.0	.24	.07	.12		
	d	m	m	d	d	m	xd	d	d	d	d	m	m	m	m	m		
	100%			100%	100%		23%	100%	96%	98%	98%							
Dec88	-6.4	72.	59.	68.	8.5	2.0	49.	56.6	4.49	.43	.43	.18	19.5	.18	.05	.16		
	d	m	m	d	d	m	m	d	d	d	d	m	m	m	m	m		
	100%			100%	96%			100%	91%	96%	96%							
Jan89	-6.5	72.	33.	96.	6.2	2.0	48.	79.0	4.39	.63	.70	.21	29.0	.27	.08	.34		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%			100%													
Feb89	-10.1	69.	8.	123.	6.5	2.0	59.	70.0	4.27	.48	.68	.11	21.0	.19	.03	.18		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	96%			96%													
Mar89	-5.0	64.	31.	225.	6.0	2.0	67.	90.0	4.34	.75	.63	.12	26.0	.34	.06	.24		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%			100%													
Apr89	2.7	61.	33.	167.	3.0	2.0	71.	82.0	4.32	.81	.66	.12	24.2	.42	.02	.14		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%			100%													
May89	11.5	70.	228.	233.	3.7	2.0	68.	121.0	4.97	.71	.35	.10	14.8	.70	.16	.13		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%			100%													
Jun89	16.2	84.	463.	154.	1.0	2.0	65.	34.0	4.13	1.07	.64	.12	44.0	.44	.03	.20		
	d	d	m	d	d	m	m	m	m	m	m	m	m	m	m	m		
	90%	96%		100%	100%													
Jul89	19.1	73.	352.	308.	1.2	2.0	77.	11.0	4.65	.98	.49	.12	12.5	.38	.04	.42		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%			100%													
Aug89	17.0	82.	480.	257.	1.7	2.0	69.	43.0	4.05	1.80	.61	.07	50.5	.60	.02	.26		
	d	d	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	100%	100%			100%													
Mean	4.8	73.	2676.	1985.	4.2	2.0	60.	953.6	4.33	.81	.51	.12	24.8	.36	.06	.18		
	d	m	m	m	d	m	m	m	m	m	m	m	m	m	m	m		
	99%				98%													

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

	CLIMATE				GASES			PRECIPITATION						PREC. - OPTION				
Date	Temp C	Rh %	Tow hours	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
Sep88	21.1	76.	374.	195.	6.0	17.8	52.	105.5	4.65	.30	.07	.06	11.4	.31	.07	.01	.01	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Oct88	12.0	69.	282.	231.	9.5	32.9	31.	136.5	4.52	1.55	.23	.20	11.9	.07	.08	.03	.01	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Nov88	10.3	71.	280.	154.	10.1	28.4	23.	105.5	4.49	.40	.14	.62	13.1	.08	.21	.02	.02	.02
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Dec88	4.9	60.	122.	149.	18.3	34.6	25.	9.1	3.72	.16	1.37	.69	63.6	.63	.29	.26	.05	.07
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jan89	6.8	66.	256.	137.	11.3	31.6	26.	53.0	4.19	.12	.06	.09	18.4	.05	.02	.01	.01	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Feb89	5.7	72.	267.	90.	13.9	27.1	32.	167.6	4.42	.55	.26	.24	20.5	.12	.11	.02	.01	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Mar89	9.9	74.	337.	165.	8.6	26.9	47.	155.1	4.34	.64	.28	.30	21.9	.17	.15	.07	.02	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Apr89	14.6	45.		207.	11.3	28.2	69.	126.1	4.14	.93	.41	.40	31.5	.39	.18	.12	.04	.06
	d	d		m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%																
May89	18.5	53.		239.	9.6	24.4	82.	86.1	4.21	.68	.28	.26	24.6	.18	.13	.08	.02	.02
	d	d		m	m	m	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%					100%											
Jun89	25.1	68.		261.	7.6	19.4	74.	173.3	4.18	.74	.30	.19	24.5	.17	.09	.07	.02	.04
	d	d		m	m	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%	100%											
Jul89	25.7	70.		223.	6.1	16.9	76.	197.1	4.15	1.07	.38	.12	37.2	.27	.03	.05	.01	.04
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Aug89	24.7	69.		178.	7.4	15.7	69.	97.9	4.30	.68	.37	.13	28.1	.15	.05	.03	.01	.03
	d	d		m	m	d	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%				100%												
Mean	15.0	66.		2229.	10.0	25.3	51.	1412.8	4.29	.75	.28	.24	23.4	.19	.10	.05	.02	.03
	d	d		m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
	100%	100%																

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

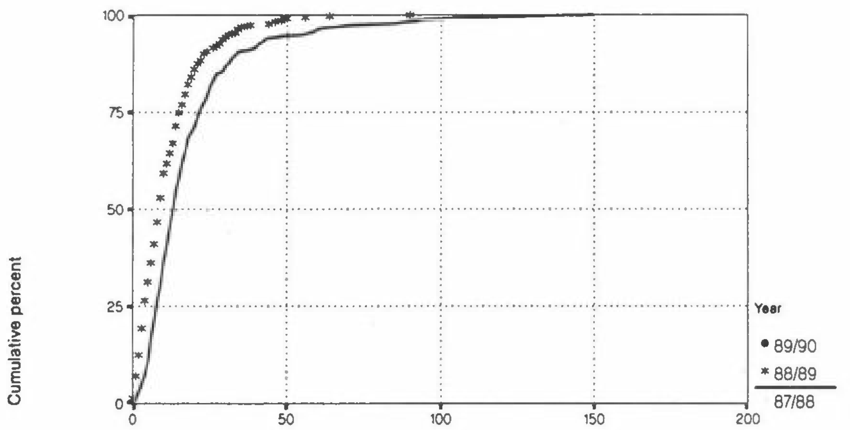
Date	C L I M A T E Temp C	Rh %	Tow hours	Sun hours	G A S E S SO2 ug/m3	NO2 ug/m3	O3 ug/m3	P R E C I P I T A T I O N mm	pH	SO4-S mg/l	NO3-N mg/l	Cl mg/l	Cond uS/cm	P R E C. - O P T I O N NH4-N mg/l	Na mg/l	Ca mg/l	Mg mg/l	K mg/l
Sep88	17.6	70.	270.	169.	55.0	40.5	30.	49.9	3.98	1.74	.38	.24	44.3	.55	.04	.37	.07	.03
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Oct88	8.6	64.	158.	142.	54.5	43.3	22.	43.9	4.43	1.11	.38	.22	27.4	.85	.07	.42	.08	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	80%	80%											
Nov88	7.2	64.	100.	106.	71.1	42.5	19.	33.7										
	d	d	d	+m	d	d	d	+m										
	100%	100%	100%		100%	100%	100%											
Dec88	.9	59.	25.	120.	57.2	38.4	22.	45.5										
	d	d	d	m	d	d	d	+m										
	100%	100%	100%		100%	100%	100%											
Jan89	3.2	63.	103.	128.	77.5	45.3	18.	97.6	4.07	1.70	.30	.39	48.6	.23	.08	.24	.05	.03
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Feb89	-1.5	65.	112.	77.	77.0	46.8	27.	95.8	4.08	1.32	.22	.35	38.9	.07	.03	.22	.03	.01
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Mar89	5.7	61.	118.	161.	70.9	51.2	33.	102.3	3.93	1.53	.39	.60	47.2	.32	.07	.39	.07	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Apr89	8.9	57.	106.	173.	63.7	63.1	42.	38.9	3.81	2.39	.62	.29	62.7	.44	.04	.73	.13	.05
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
May89	14.5	67.	274.	117.	46.6	41.1	54.	151.9	3.87	1.77	.53	.34	52.9	.73	.06	.38	.07	.05
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jun89	20.5	67.	236.	173.	46.2	41.0	51.	139.9	3.79	2.03	.46	.35	61.8	.34	.02	.29	.04	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Jul89	23.0	64.	173.	206.	54.2	42.7	55.	104.7	3.74	2.66	1.07	.26	93.8	.42	.02	.43	.07	.03
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	93%	100%											
Aug89	21.7	63.	106.	197.	40.9	41.4	58.	28.7	4.18	1.47	.49	.14	41.2	.40	.02	.34	.06	.05
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	100%	100%											
Mean	10.9	64.	1781.	1769.	59.4	44.8	36.	932.8	3.91	1.82	.49	.35	54.9	.42	.05	.35	.06	.04
	d	d	d	m	d	d	d	m	m	m	m	m	m	m	m	m	m	m
	100%	100%	100%		100%	97%	98%											

ANNEX 3

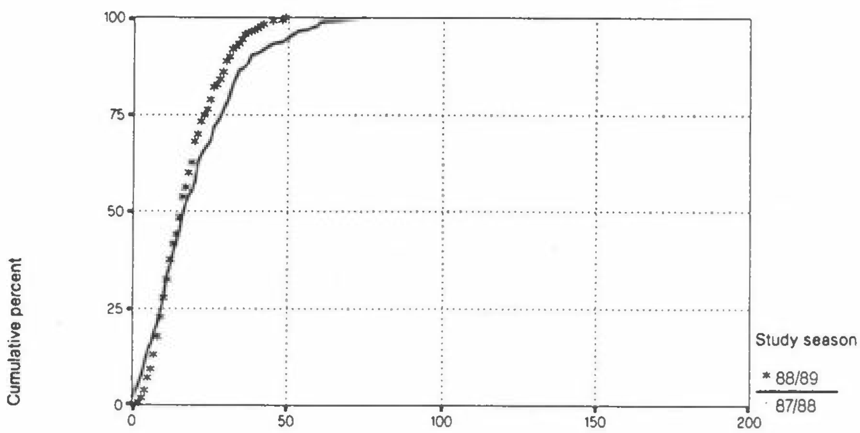
Cumulative frequency distributions of daily data
for three years

SITE 04
FIN Espoo

Daily data SO_2 ($\mu g/m^3$)



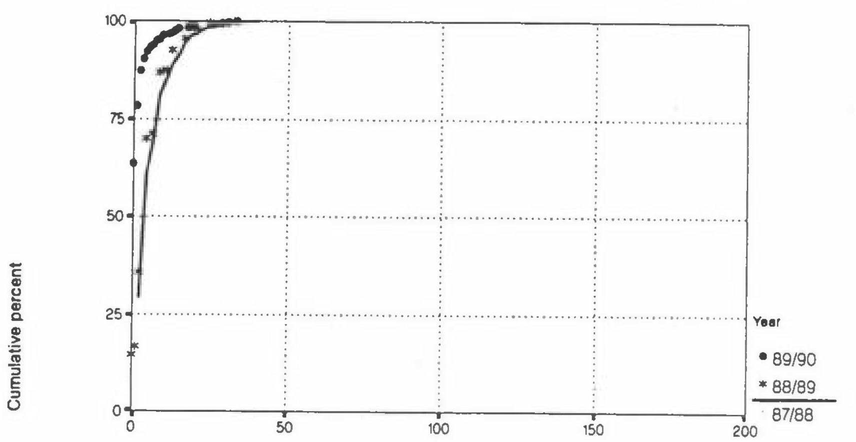
Daily data NO_2 ($\mu g/m^3$)



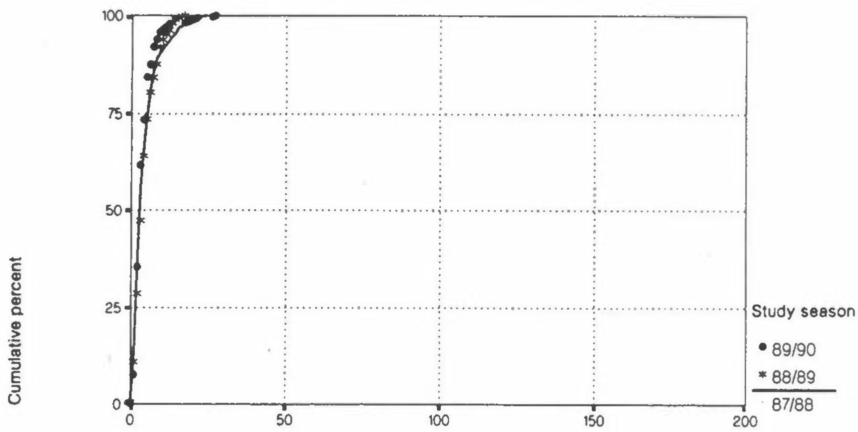
	Valid N
Site number 04	
FIN Espoo	
Study year	
87-88	
SO2	340
NO2	348
Ozone	
88-89	
SO2	351
NO2	360
Ozone	
89-90	
SO2	
NO2	
Ozone	

SITE 05
FIN Ahtari

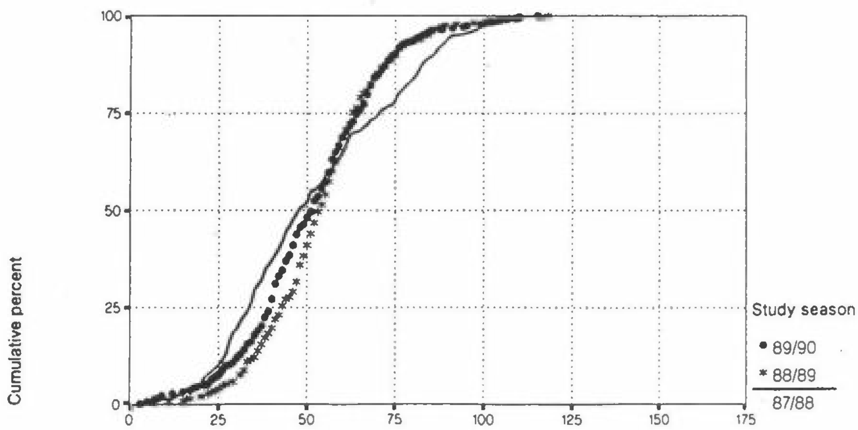
Daily data SO$_2$ (µg/m^3)



Daily data NO$_2$ (µg/m^3)



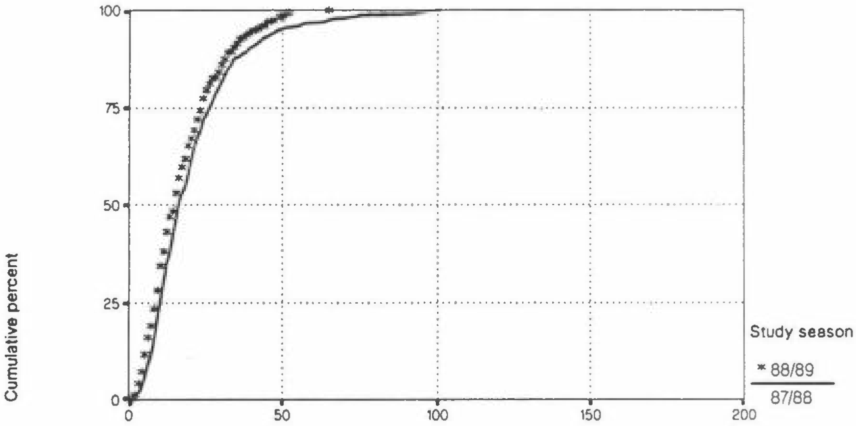
Daily data O$_3$ (µg/m^3)



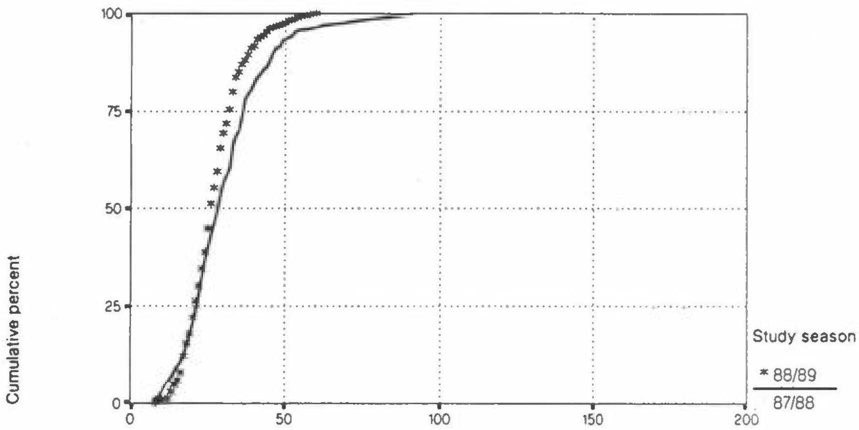
	Valid N
Site number 05	
FIN Ahtari	
Study year	
87–88	
SO2	366
NO2	290
Ozone	325
88–89	
SO2	365
NO2	210
Ozone	351
89–90	
SO2	365
NO2	313
Ozone	338

SITE 06
FIN Helsinki-Vallila

Daily data SO_2 (µg/m³)

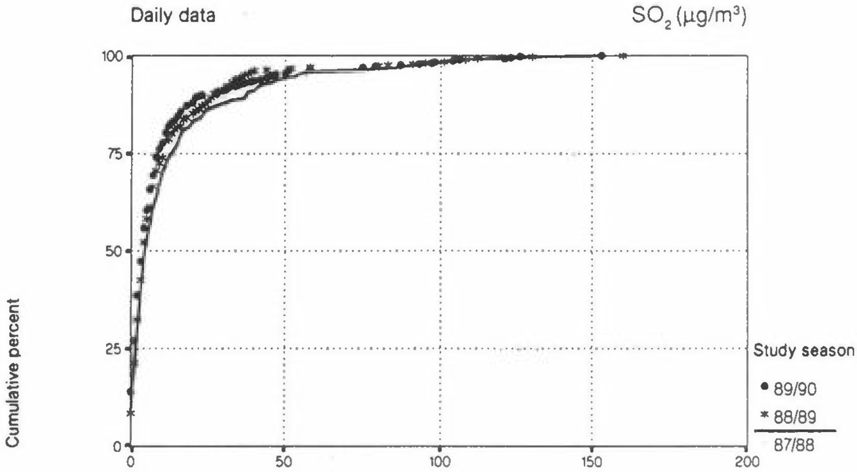


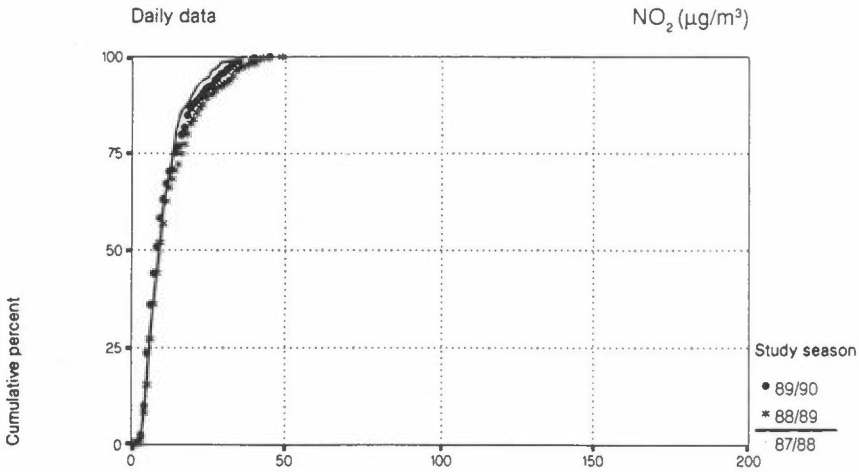
Daily data NO_2 (µg/m³)

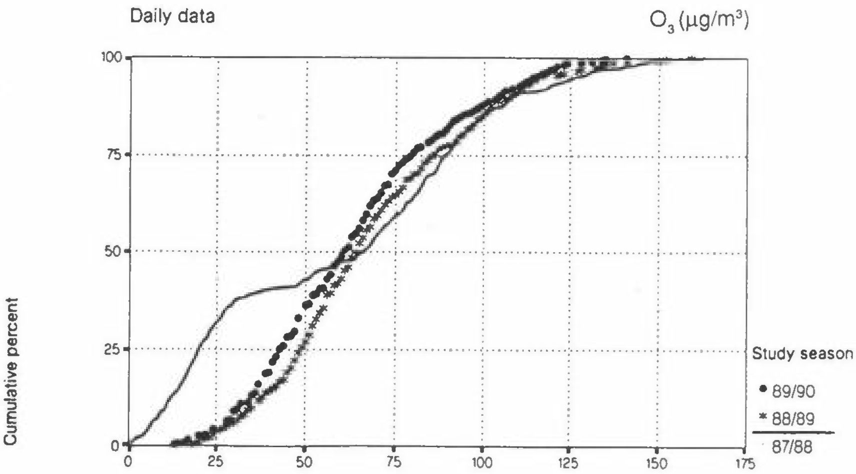


	Valid N
Site number 06	
FIN Helsinki-Vallila	
Study year	
87-88	
SO2	329
NO2	309
Ozone	
88-89	
SO2	363
NO2	359
Ozone	
89-90	
SO2	
NO2	
Ozone	

SITE 07
FRG Waldhof-Langenbrugge

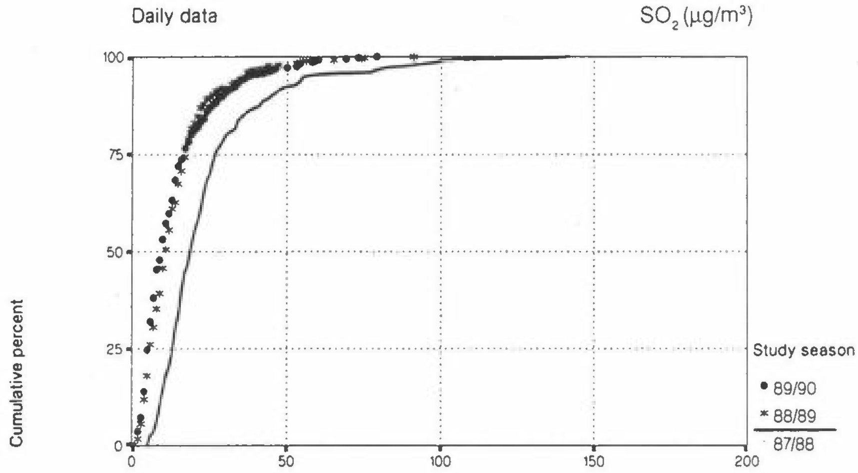


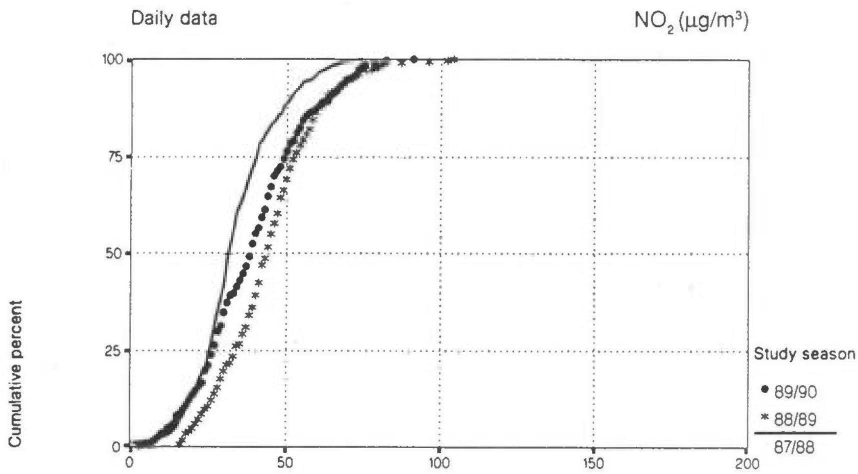


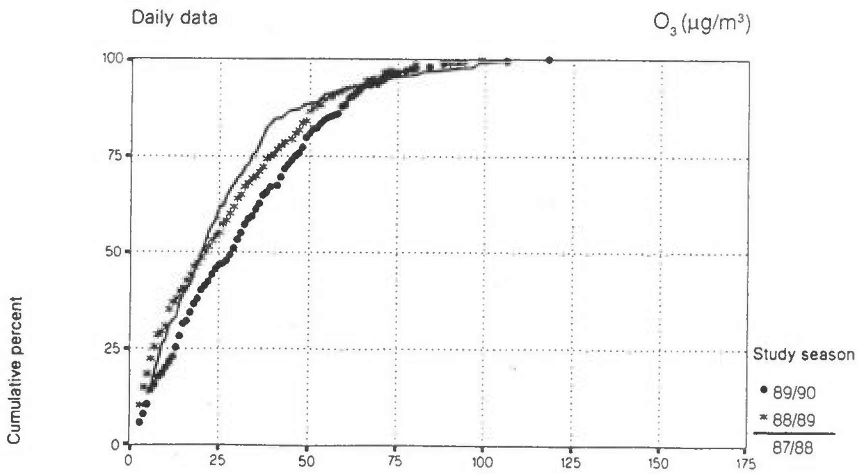


	Valid N
Site number 07	
FRG	
Waldhof-Langenbrugge	
Study year	
87-88	
SO2	354
NO2	351
Ozone	283
88-89	
SO2	365
NO2	365
Ozone	360
89-90	
SO2	358
NO2	361
Ozone	360

SITE 08
FRG Aschaffenburg

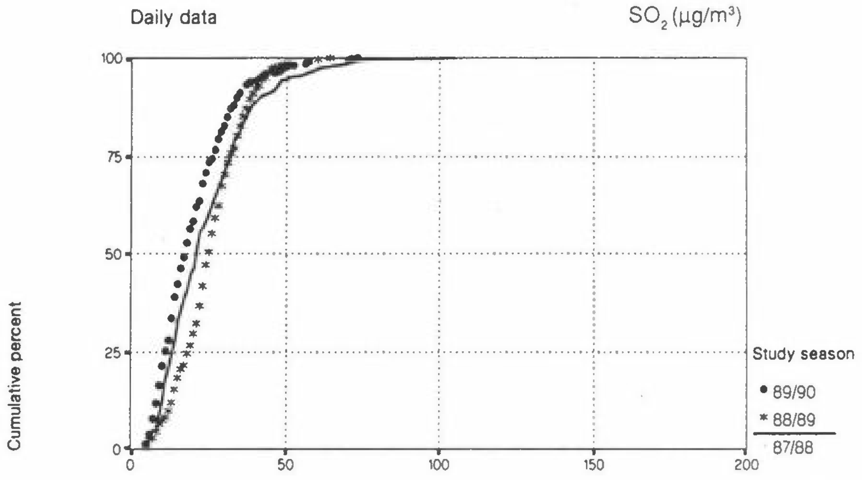


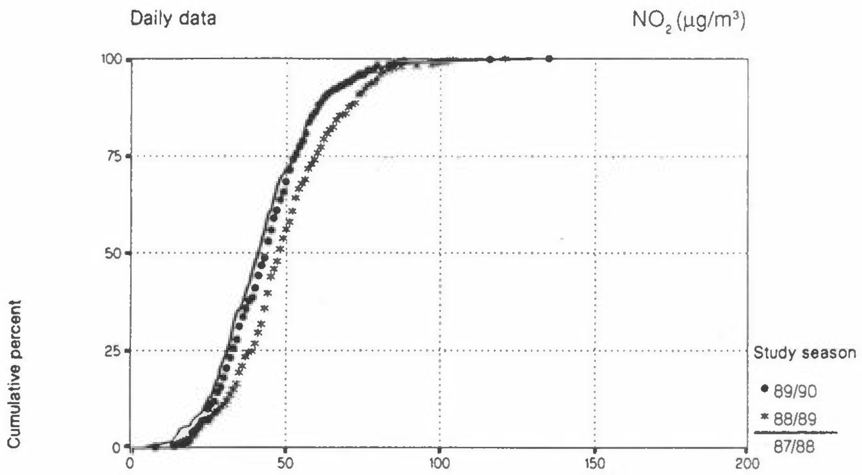




	Valid N
Site number 08	
FRG Aschaffenburg	
Study year	
87-88	
SO2	259
NO2	248
Ozone	254
88-89	
SO2	356
NO2	351
Ozone	331
89-90	
SO2	361
NO2	364
Ozone	276

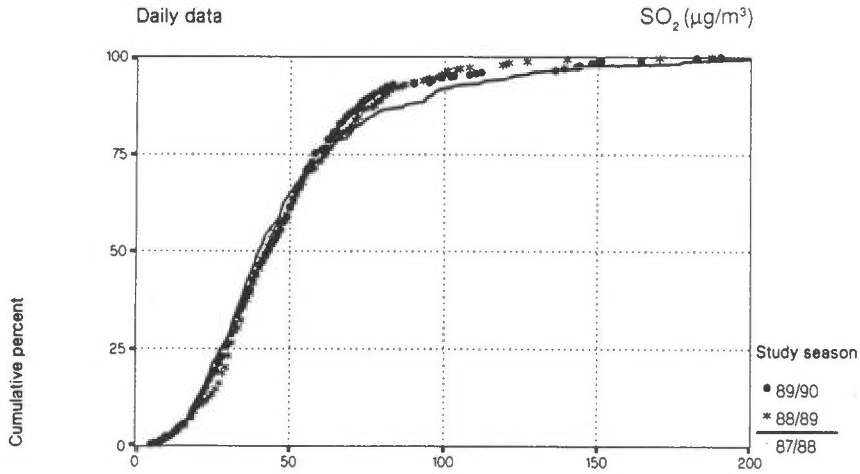
SITE 09
FRG Langenfeld-Reusrath

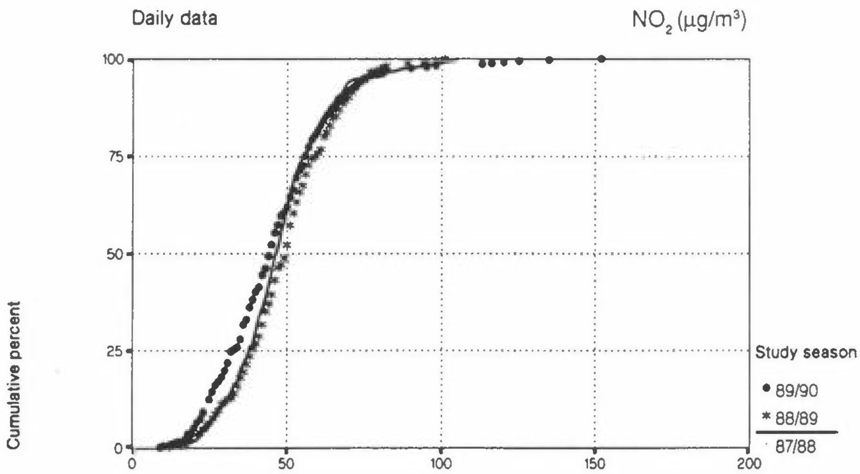




	Valid N
Site number 09	
FRG	
Langenfeld-Reusrath	
Study year	
87-88	
SO2	333
NO2	333
Ozone	
88-89	
SO2	299
NO2	355
Ozone	
89-90	
SO2	326
NO2	346
Ozone	

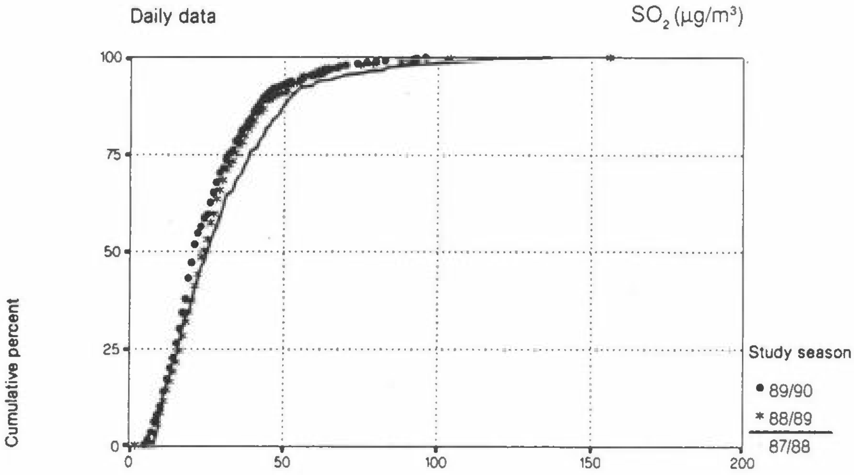
SITE 10
FRP Bottrop

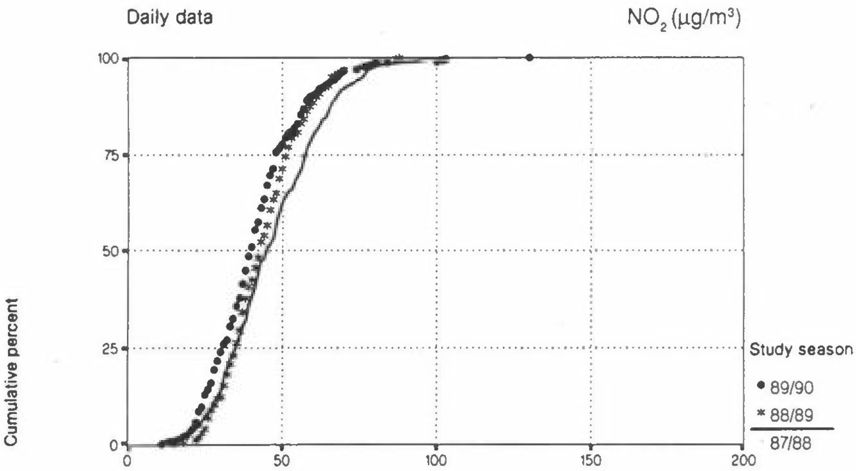




	Valid N
Site number 10	
FRG Bottrop	
Study year	
87-88	
SO2	340
NO2	356
Ozone	
88-89	
SO2	338
NO2	350
Ozone	
89-90	
SO2	350
NO2	347
Ozone	

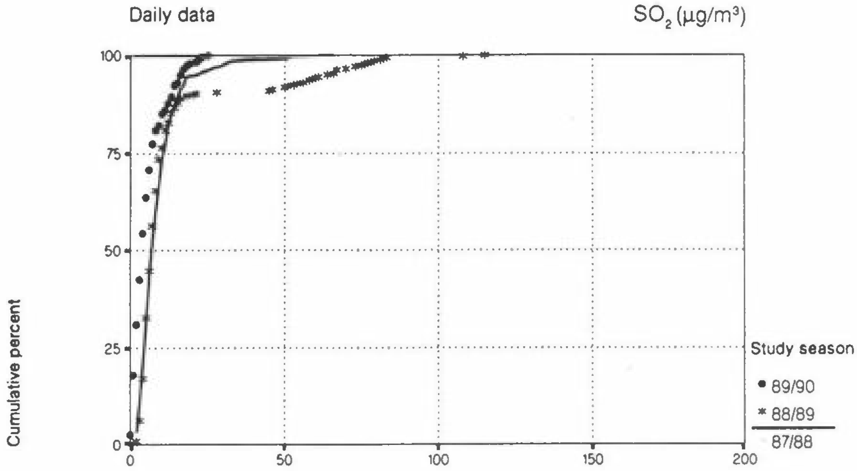
SITE 11
FRG Essen-Leithe

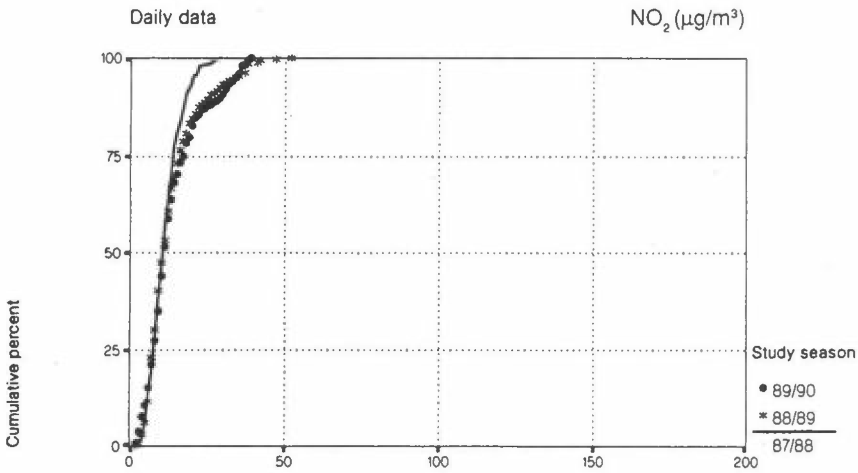


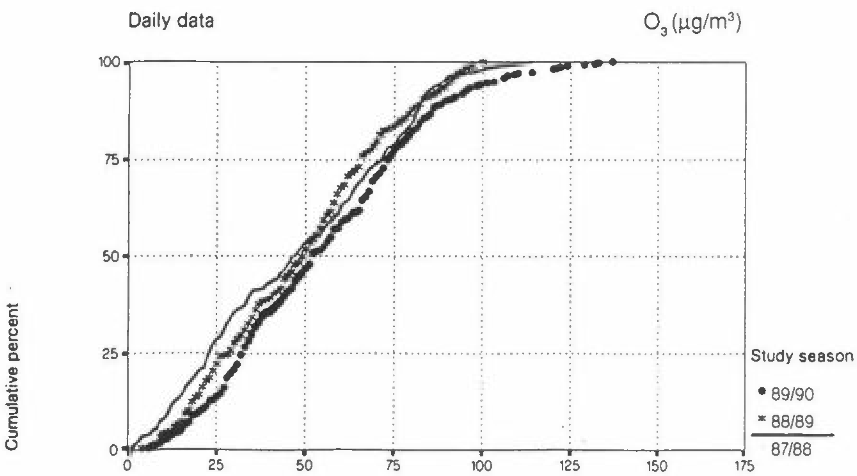


	Valid N
Site number 11	
FRG Essen-Leithe	
Study year	
87-88	
SO2	332
NO2	332
Ozone	
88-89	
SO2	351
NO2	343
Ozone	
89-90	
SO2	345
NO2	350
Ozone	

SITE 12
FRG Garmisch-Partenkirchen

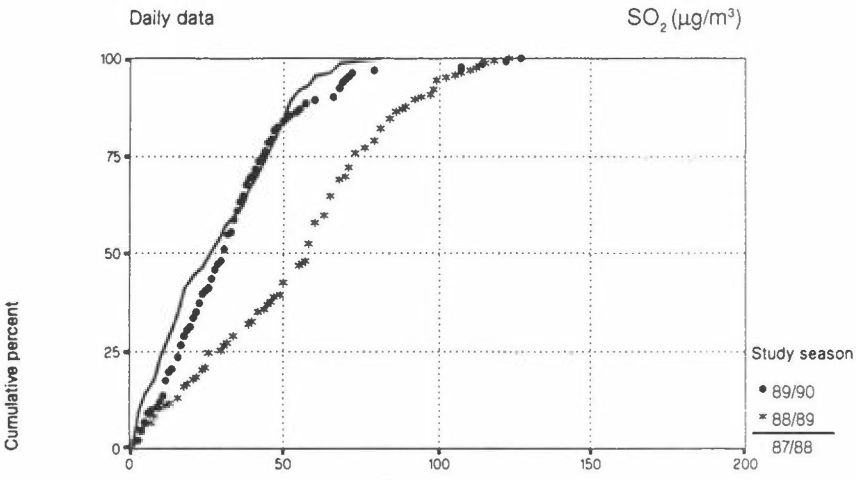


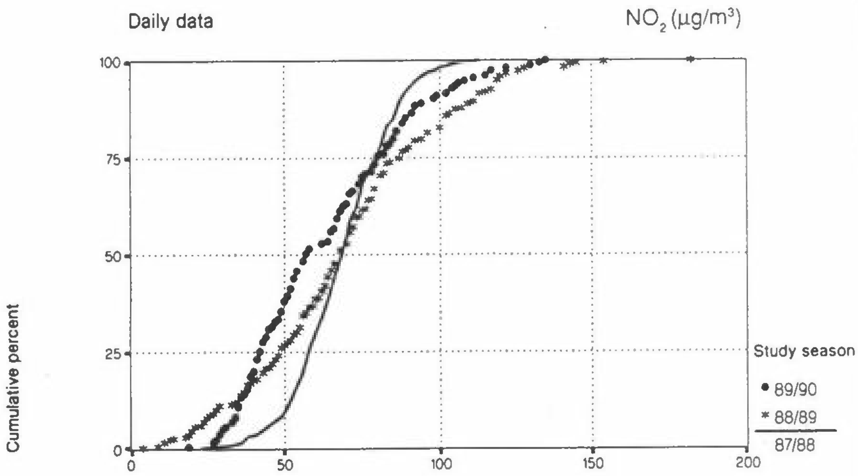




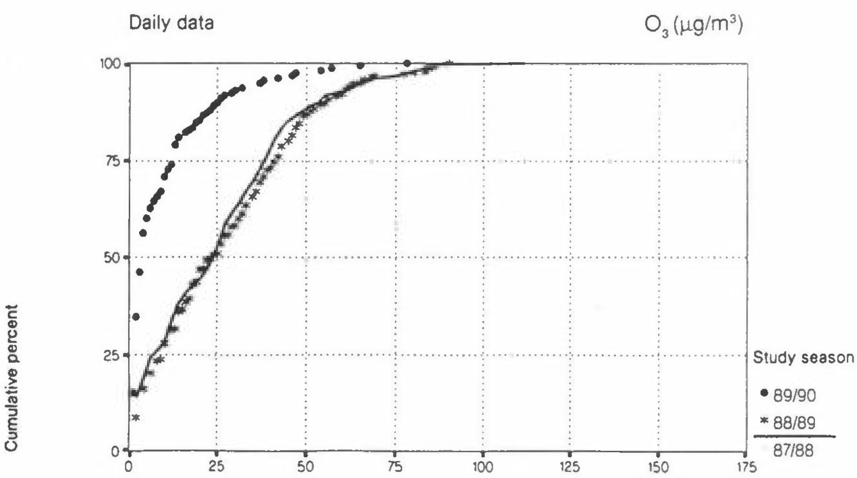
	Valid N
Site number 12	
FRG	
Garmisch-Partenkirchen	
Study year	
87-88	
SO2	263
NO2	265
Ozone	270
88-89	
SO2	342
NO2	344
Ozone	365
89-90	
SO2	305
NO2	303
Ozone	361

SITE 13
ITA Rome

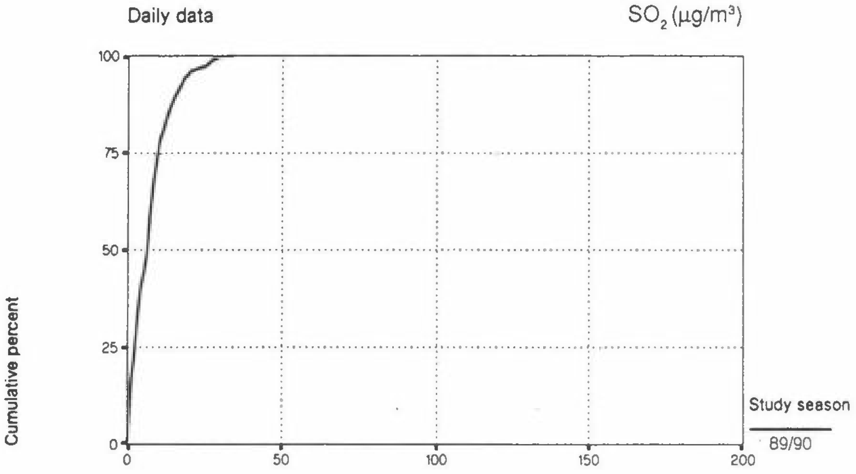


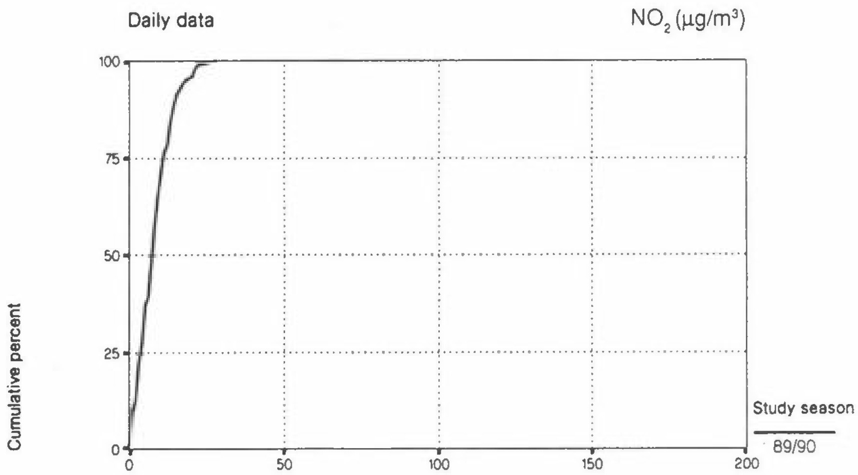


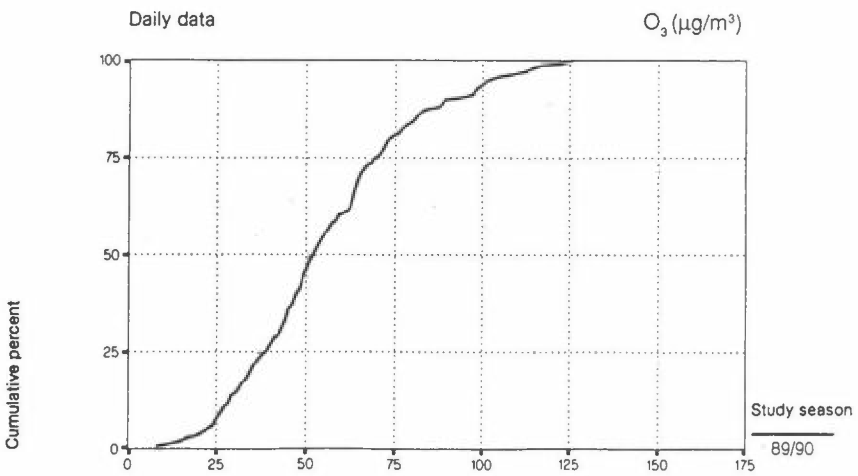
	Valid N
Site number 13	
ITA Rome	
Study year	
87-88	
SO2	249
NO2	300
Ozone	317
88-89	
SO2	162
NO2	295
Ozone	286
89-90	
SO2	131
NO2	155
Ozone	158



SITE 14
ITA Casaccia

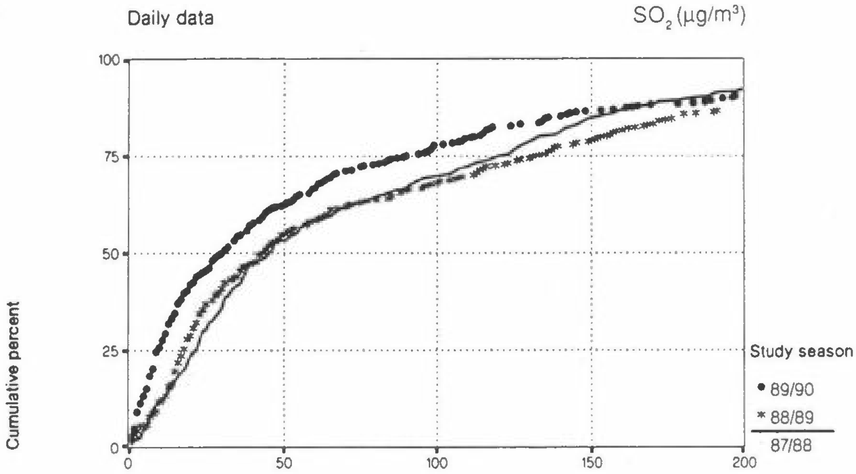


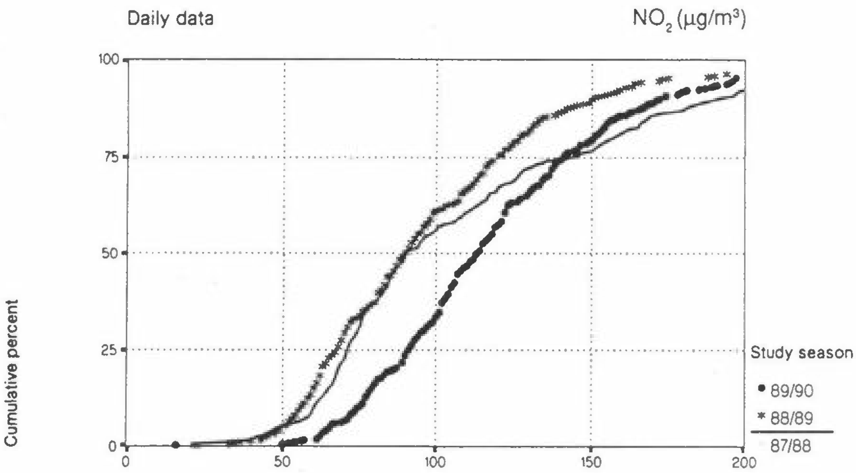


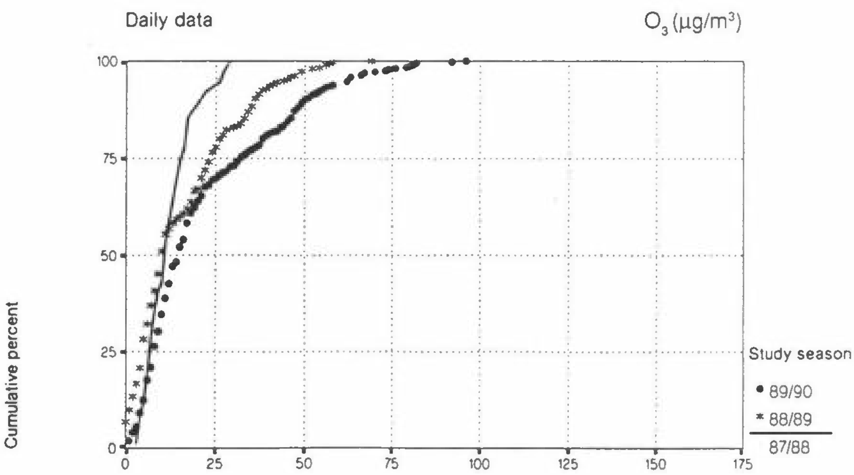


	Valid N
Site number 14	
ITA Casaccia	
Study year	
87–88	
SO2	
NO2	
Ozone	
88–89	
SO2	
NO2	
Ozone	
89–90	
SO2	281
NO2	102
Ozone	249

SITE 15
ITA Milan



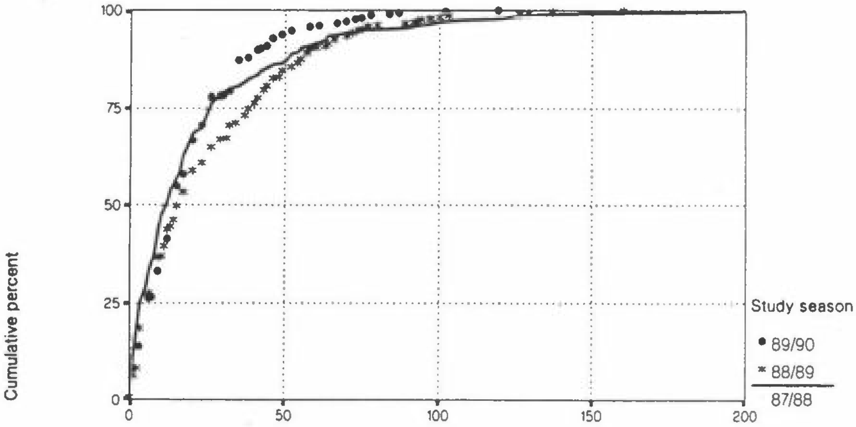




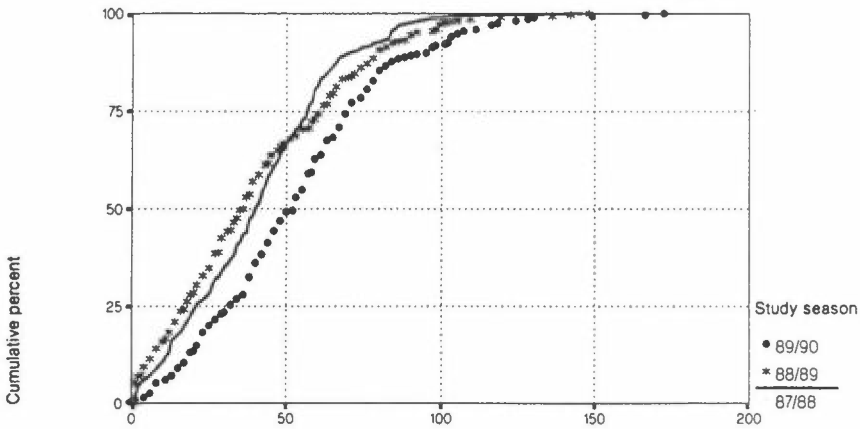
	Valid N
Site number 15	
ITA Milan	
Study year	
87-88	
SO2	302
NO2	236
Ozone	76
88-89	
SO2	351
NO2	356
Ozone	293
89-90	
SO2	364
NO2	365
Ozone	362

SITE 16
ITA Venice

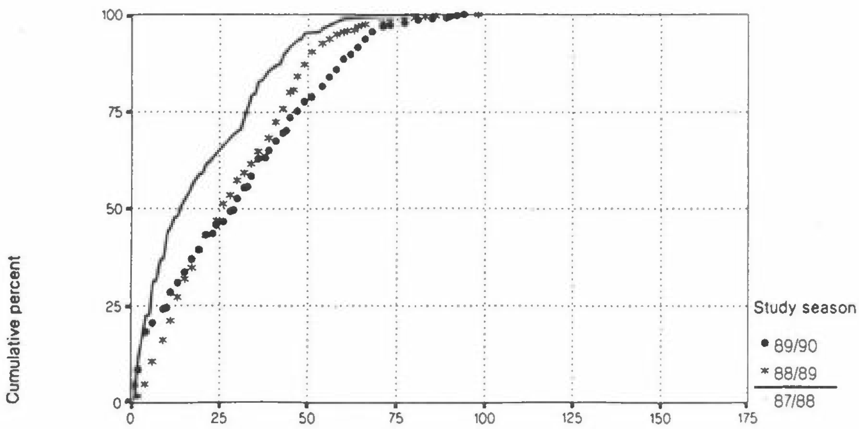
Daily data SO_2 (µg/m³)



Daily data NO_2 (µg/m³)

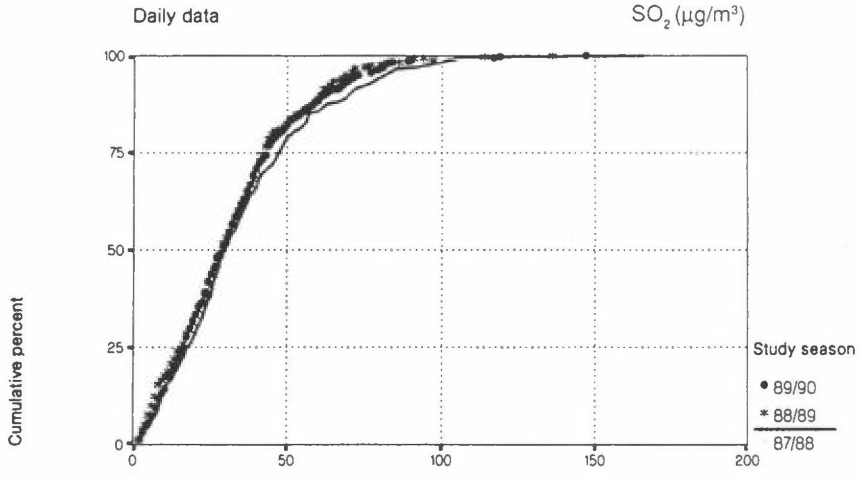


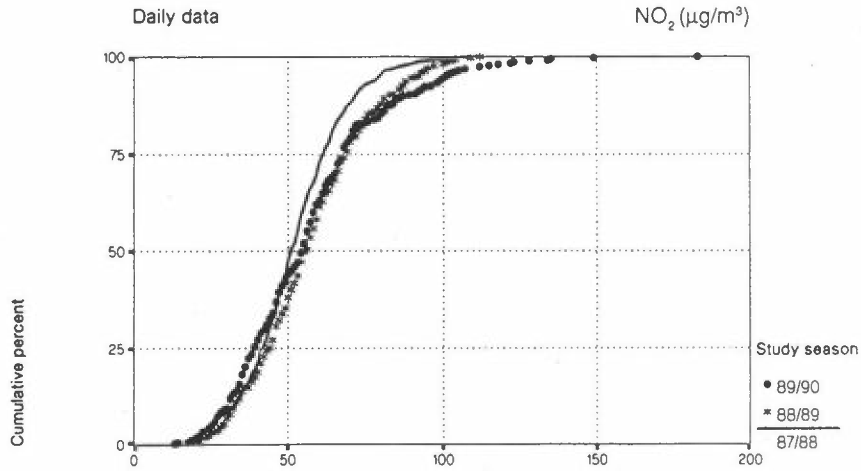
Daily data O_3 (µg/m³)



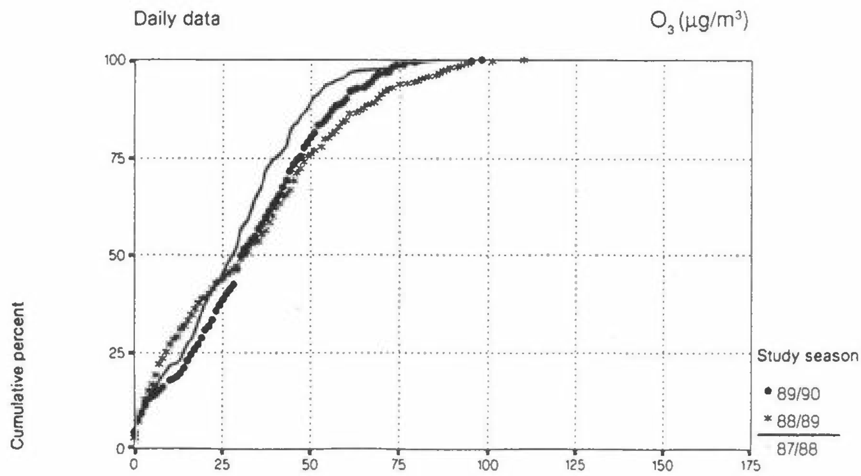
	Valid N
Site number 16	
ITA Venice	
Study year	
87-88	
SO2	292
NO2	279
Ozone	296
88-89	
SO2	299
NO2	298
Ozone	345
89-90	
SO2	307
NO2	268
Ozone	330

SITE 17
NL Vlaardingen

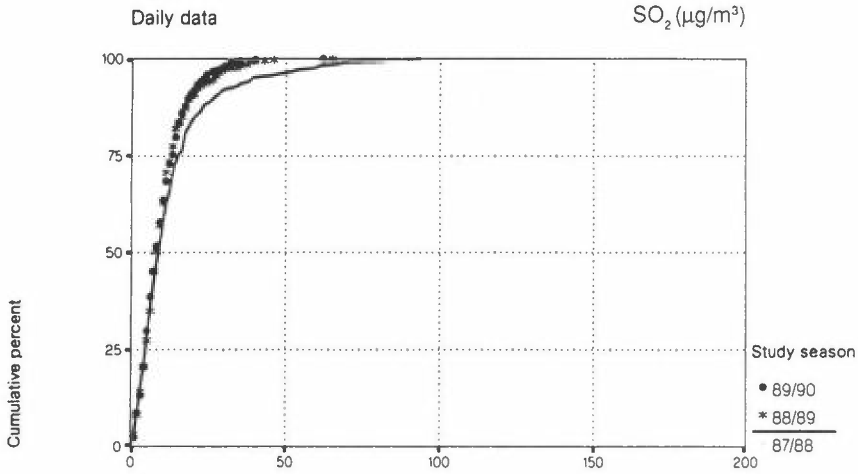


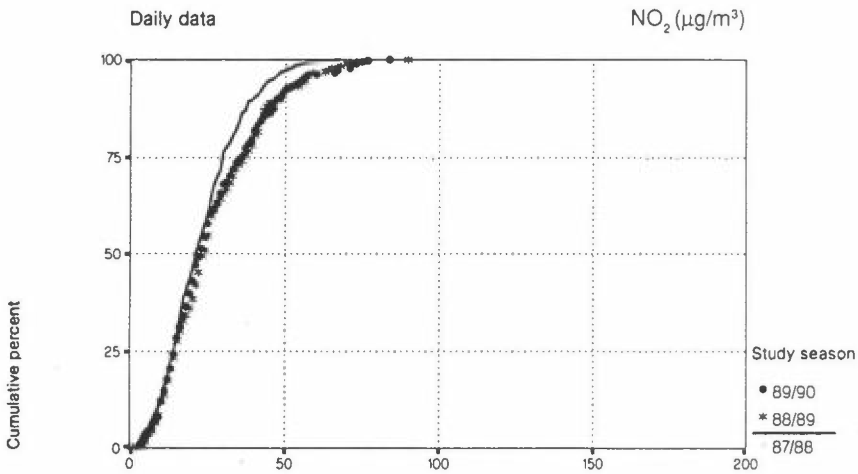


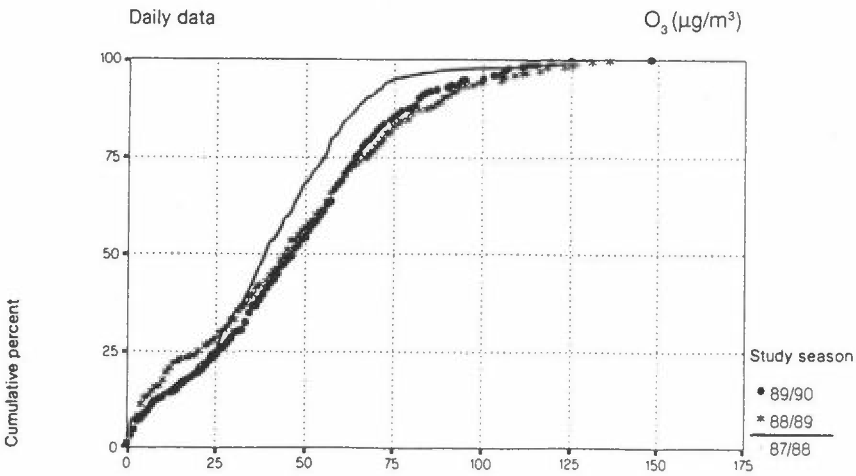
	Valid N
Site number 17	
NL Vlaardingen	
Study year	
87-88	
SO2	349
NO2	344
Ozone	346
88-89	
SO2	361
NO2	349
Ozone	352
89-90	
SO2	360
NO2	351
Ozone	346



SITE 18
NL Eibergen

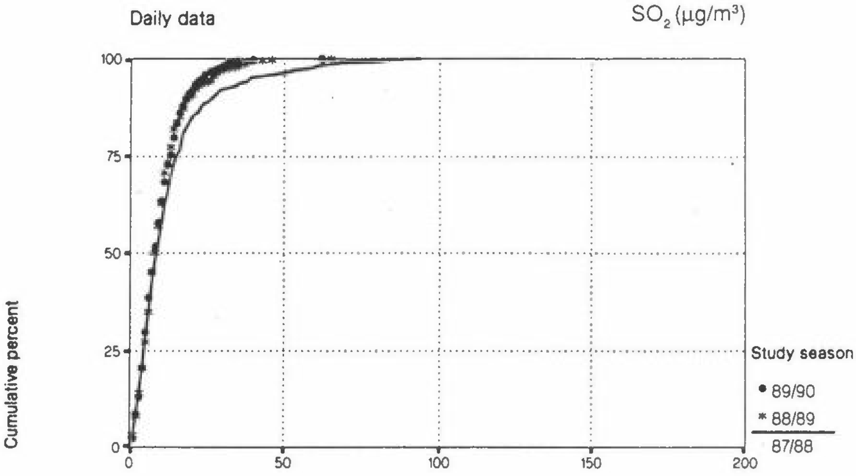


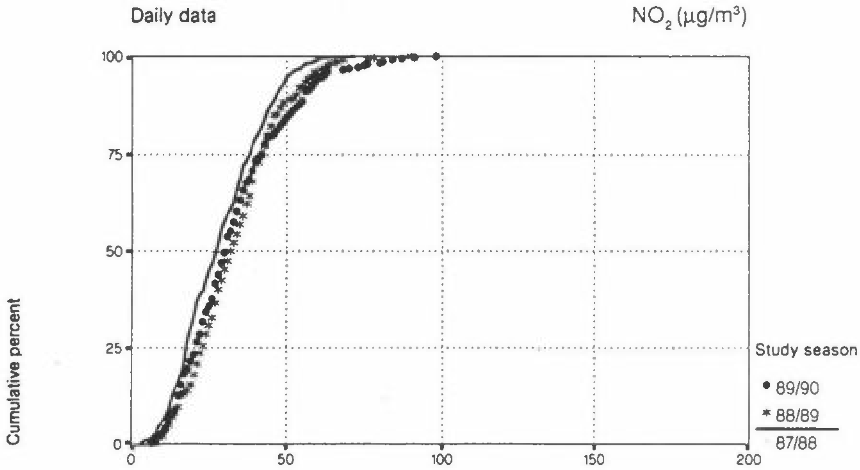


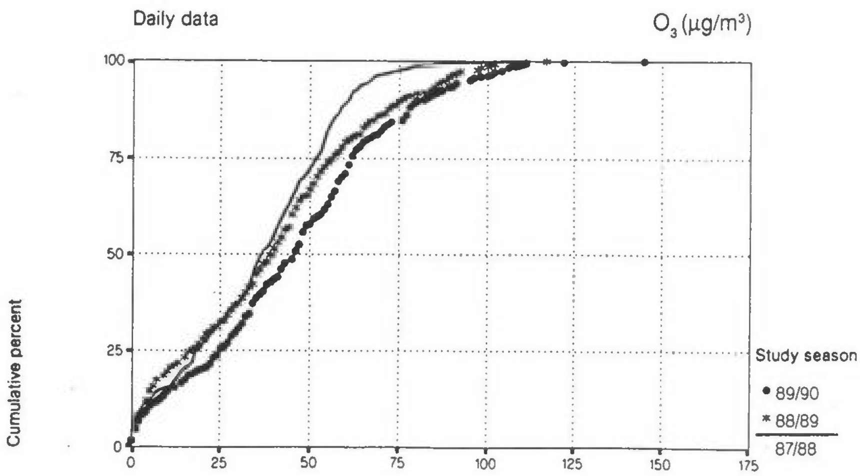


	Valid N
Site number 18	
NL Eibergen	
Study year	
87-88	
SO2	351
NO2	348
Ozone	351
88-89	
SO2	362
NO2	353
Ozone	359
89-90	
SO2	365
NO2	355
Ozone	362

SITE 19
NL Vredepeel



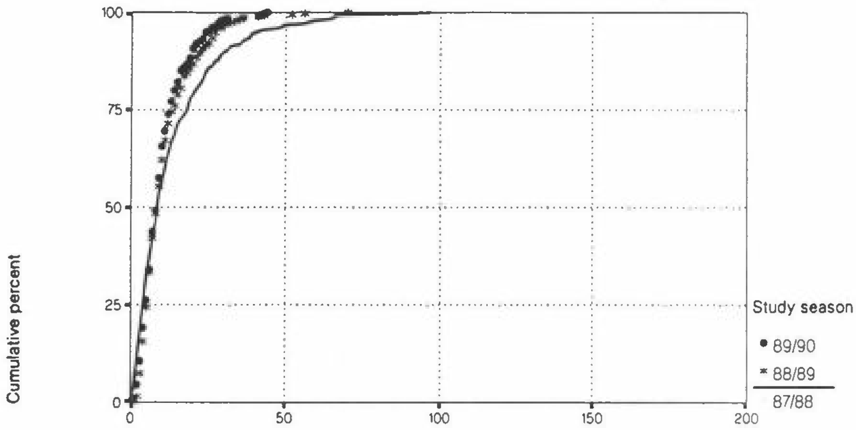




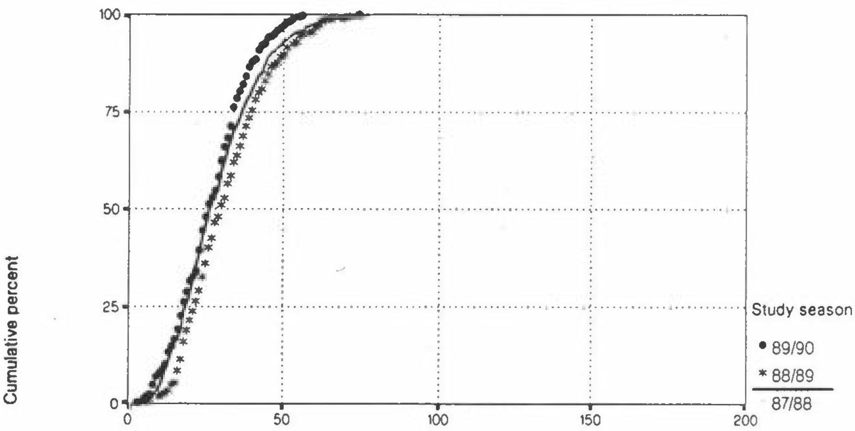
	Valid N
Site number 19	
NL Vredepeel	
Study year	
87-88	
SO2	344
NO2	338
Ozone	344
88-89	
SO2	364
NO2	362
Ozone	355
89-90	
SO2	363
NO2	355
Ozone	346

SITE 20
NL Wijnandsrade

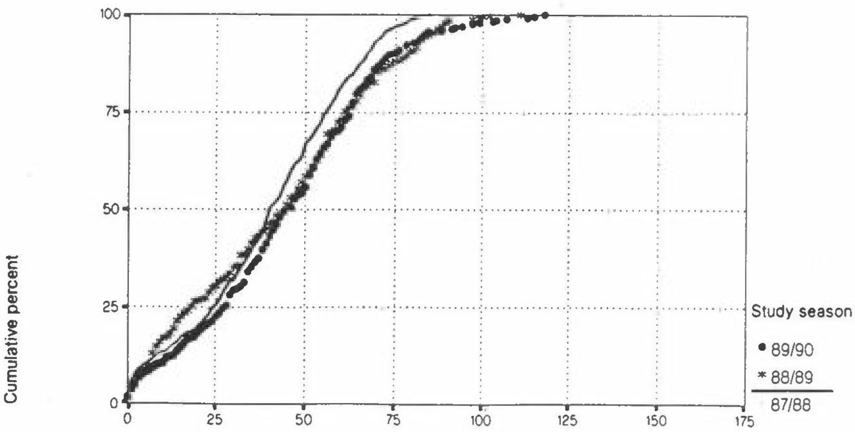
Daily data SO_2 ($\mu g/m^3$)



Daily data NO_2 ($\mu g/m^3$)

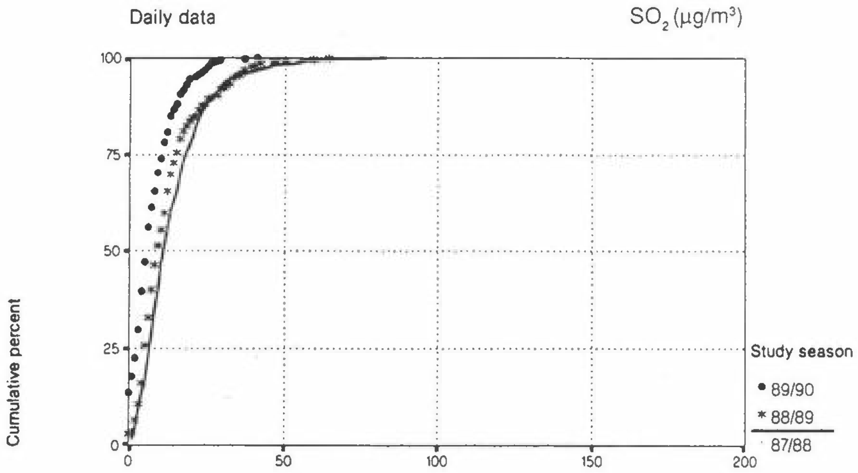


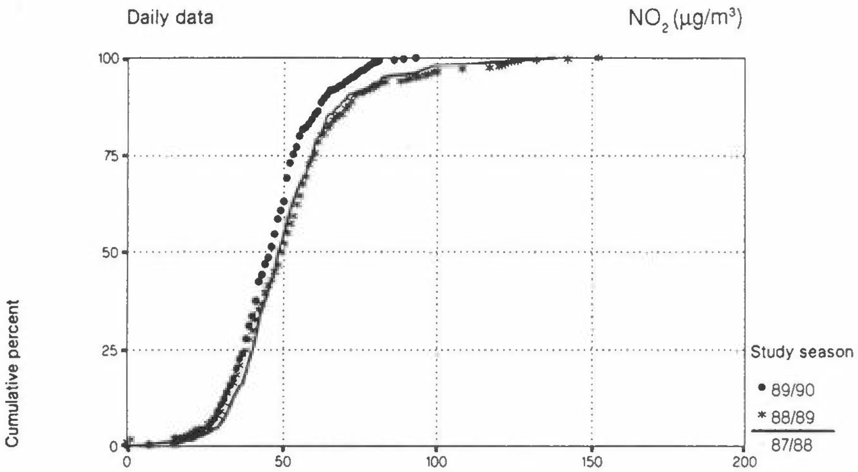
Daily data O_3 ($\mu g/m^3$)



	Valid N
Site number 20	
NL Wijnandsrade	
Study year	
87-88	
SO2	355
NO2	341
Ozone	359
88-89	
SO2	355
NO2	343
Ozone	346
89-90	
SO2	342
NO2	340
Ozone	323

SITE 21
NOR Oslo

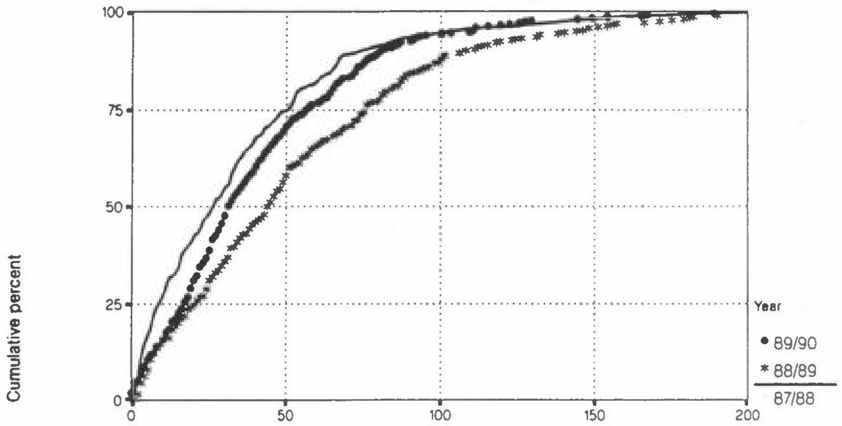




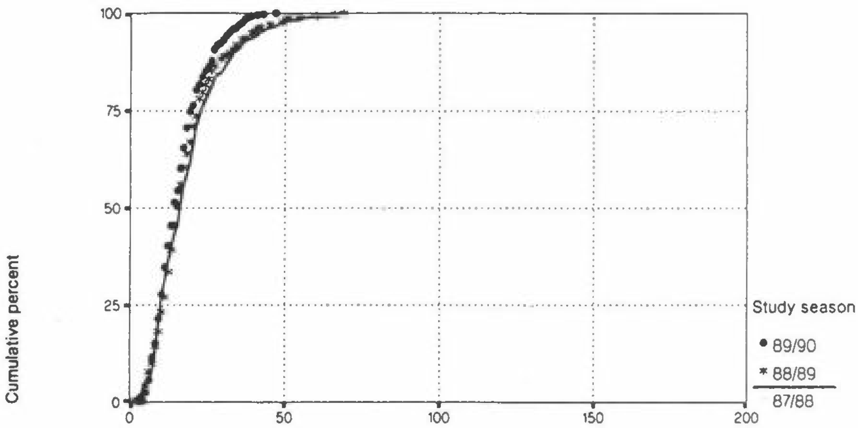
	Valid N
Site number 21	
NOR Oslo	
Study year	
87-88	
SO2	362
NO2	365
Ozone	
88-89	
SO2	365
NO2	365
Ozone	
89-90	
SO2	354
NO2	360
Ozone	

SITE 22
NOR Borregaard

Daily data SO_2 (µg/m³)

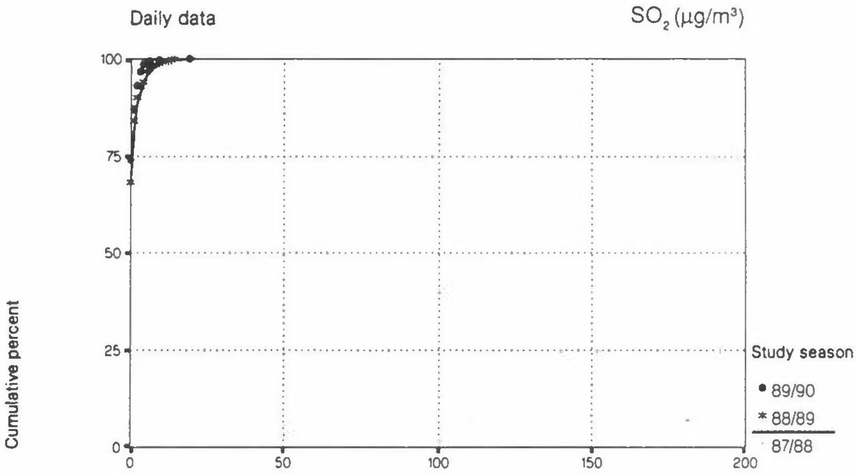


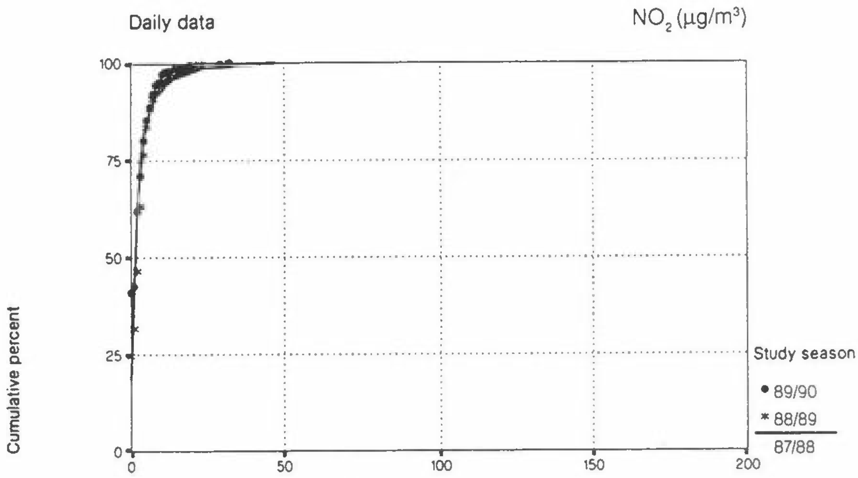
Daily data NO_2 (µg/m³)

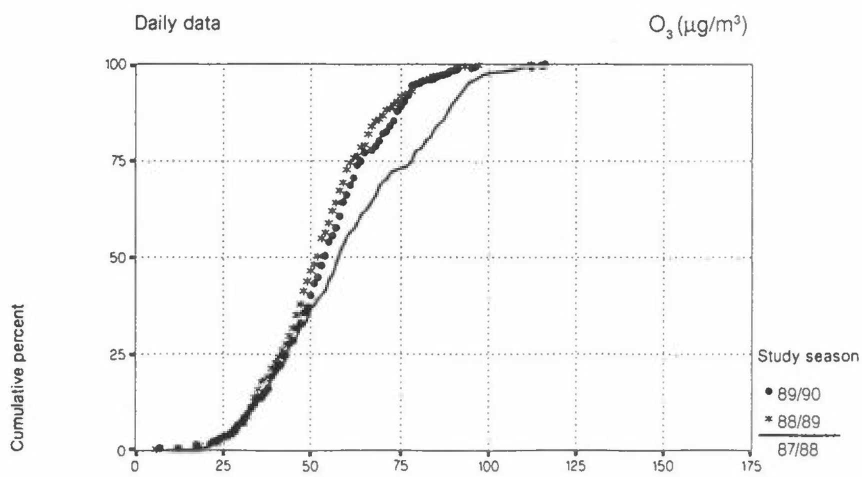


	Valid N
Site number 22	
NOR Borregaard	
Study year	
87-88	
SO2	325
NO2	304
Ozone	
88-89	
SO2	350
NO2	320
Ozone	
89-90	
SO2	350
NO2	364
Ozone	

SITE 23
NOR Birkenes



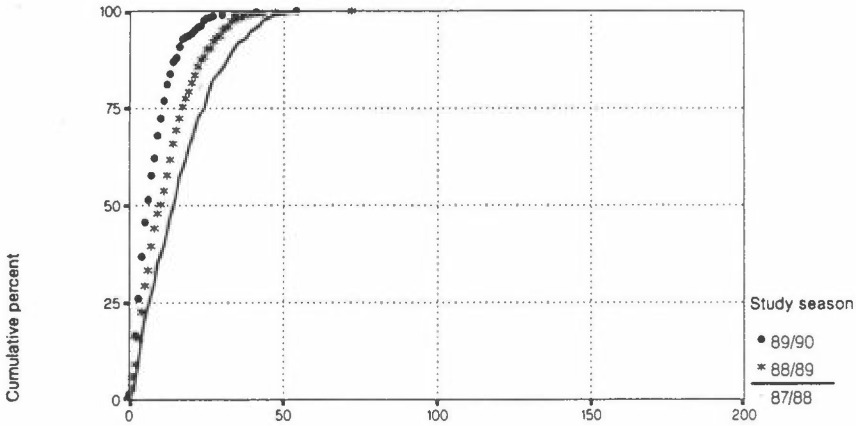




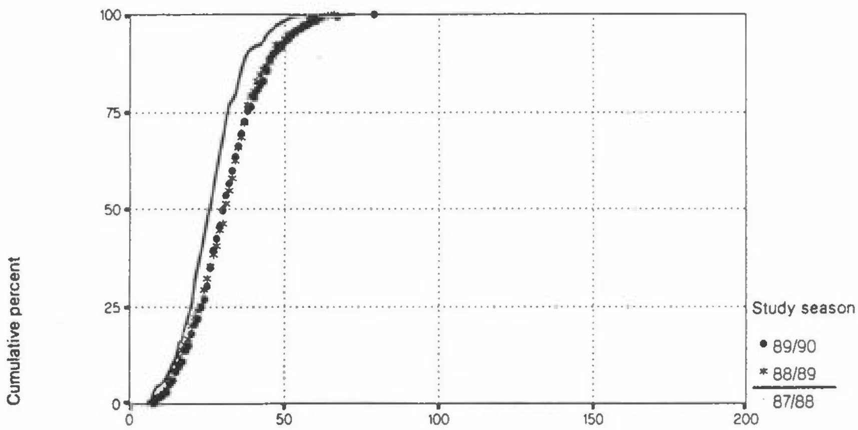
	Valid N
Site number 23	
NOR Birkenes	
Study year	
87-88	
SO2	361
NO2	350
Ozone	353
88-89	
SO2	364
NO2	365
Ozone	326
89-90	
SO2	361
NO2	365
Ozone	363

SITE 24
SWE Stockholm South

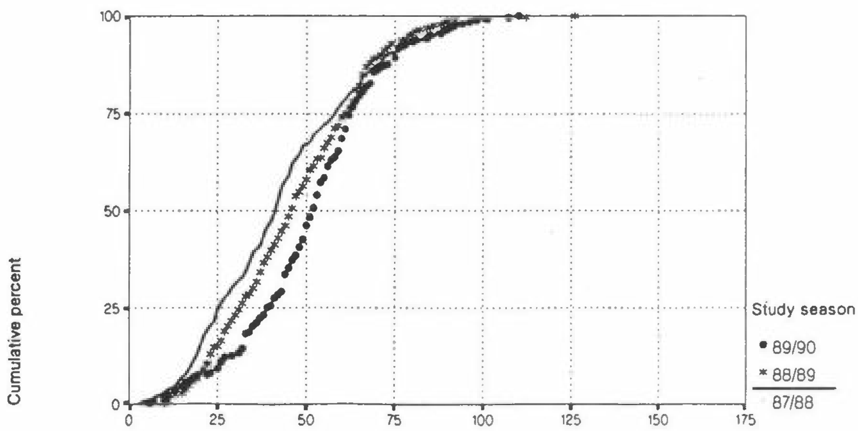
Daily data SO_2 (µg/m³)



Daily data NO_2 (µg/m³)

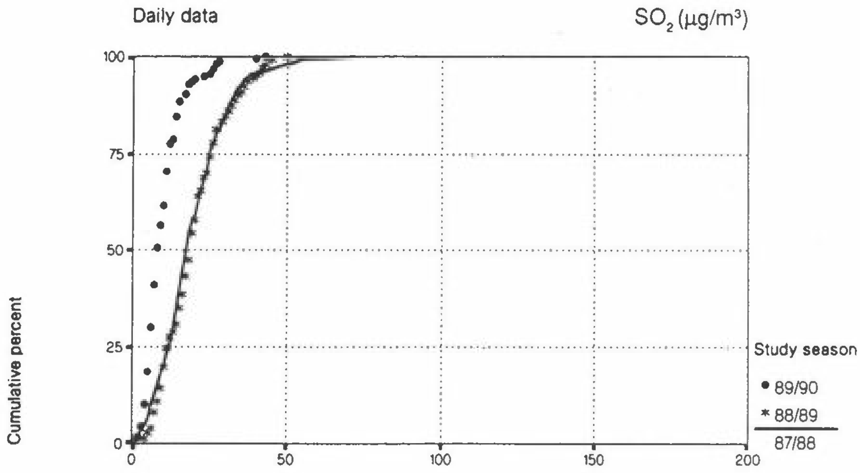


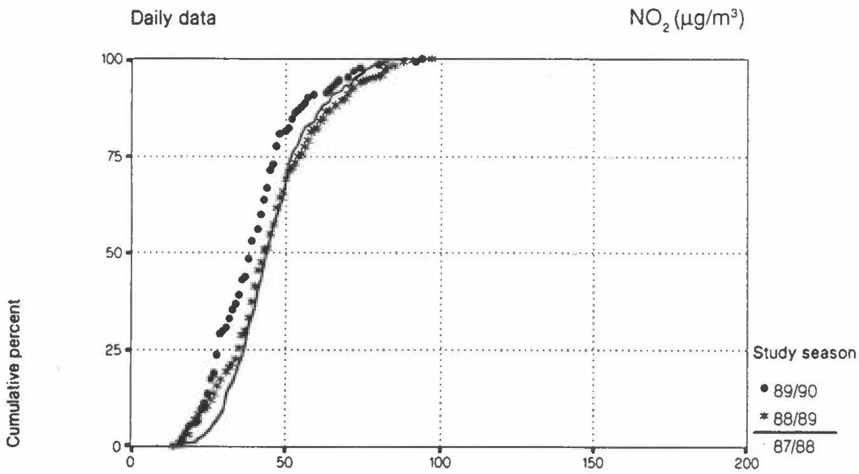
Daily data O_3 (µg/m³)



	Valid N
Site number 24	
SWE Stockholm	
South	
Study year	
87–88	
SO2	351
NO2	329
Ozone	340
88–89	
SO2	346
NO2	352
Ozone	286
89–90	
SO2	359
NO2	362
Ozone	246

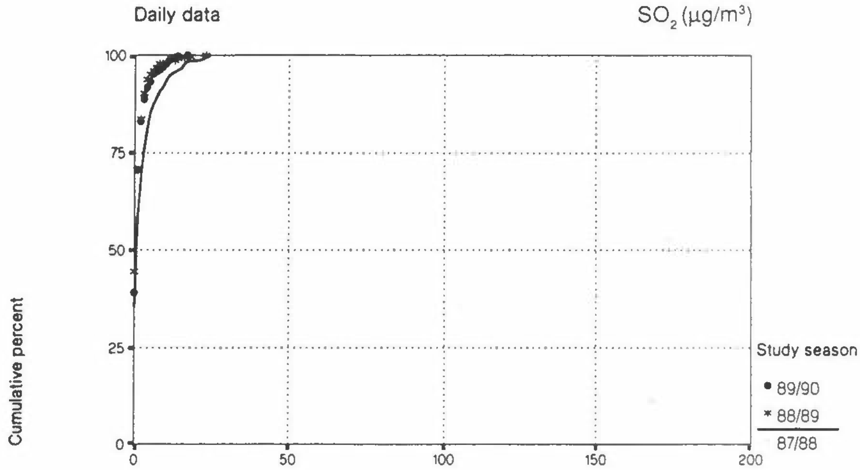
SITE 25
SWE Stockholm Centre

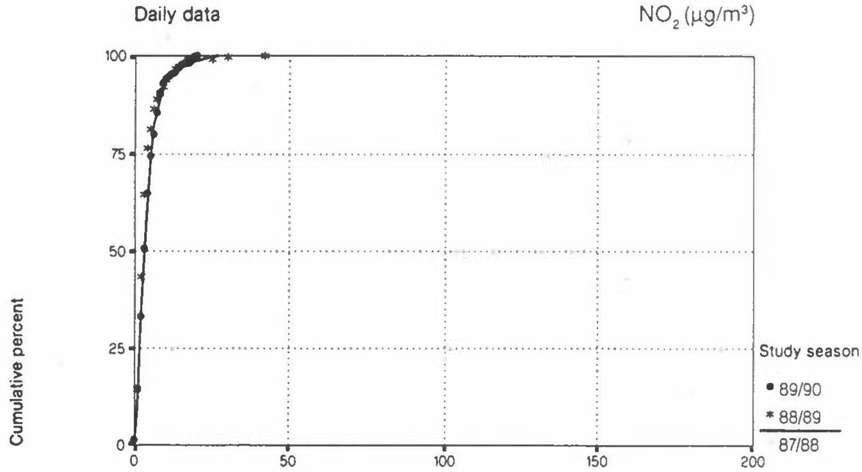


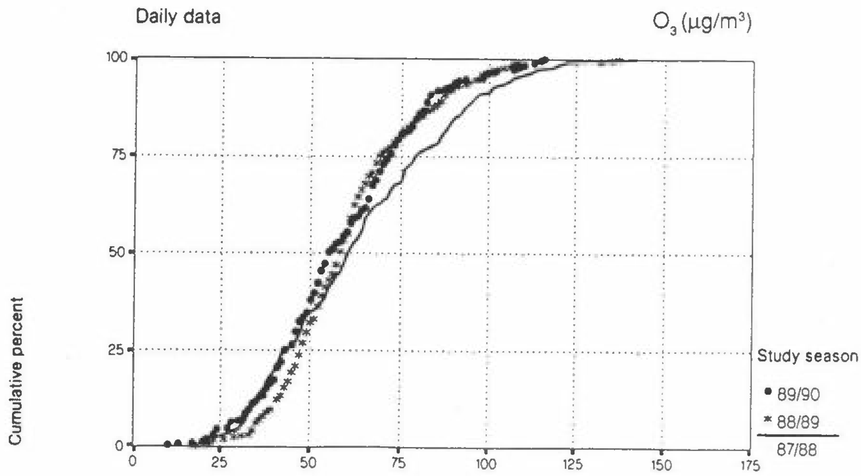


	Valid N
Site number 25	
SWE Stockholm Centre	
Study year	
87-88	
SO2	353
NO2	307
Ozone	
88-89	
SO2	145
NO2	245
Ozone	
89-90	
SO2	156
NO2	130
Ozone	

SITE 26
SWE Aspverten





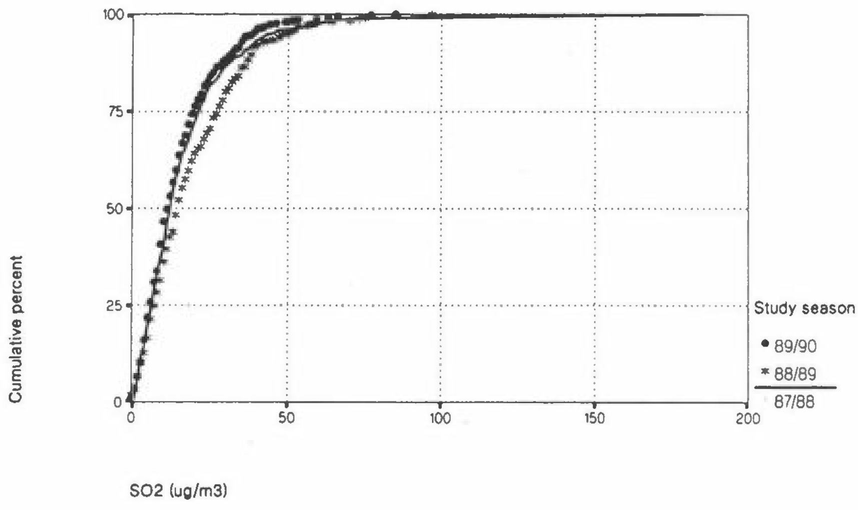


	Valid N
Site number 26	
SWE Aspvreten	
Study year	
87-88	
SO2	310
NO2	327
Ozone	236
88-89	
SO2	317
NO2	324
Ozone	324
89-90	
SO2	353
NO2	345
Ozone	273

SITE 27
UK Lincoln Cathedral

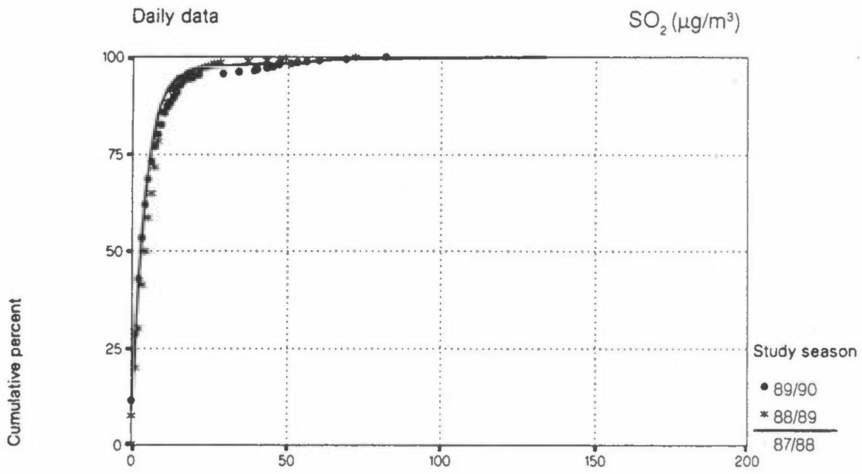
Daily data

SO_2 (µg/m³)



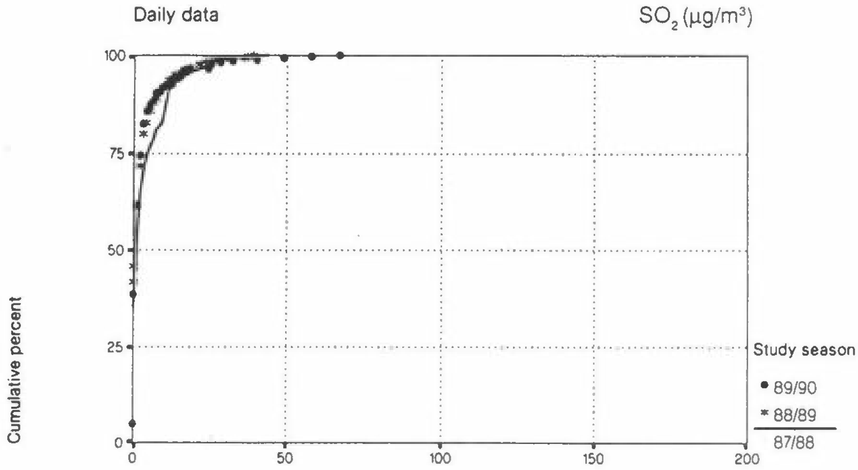
	Valid N
Site number 27	
UK Lincoln Cathedral	
Study year	
87-88	
SO2	348
NO2	
Ozone	
88-89	
SO2	320
NO2	4
Ozone	
89-90	
SO2	347
NO2	
Ozone	

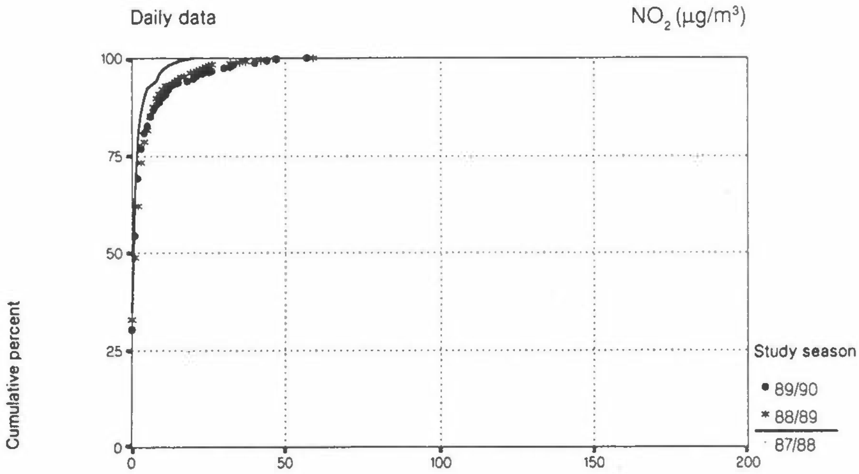
SITE 28
UK Wells Cathedral

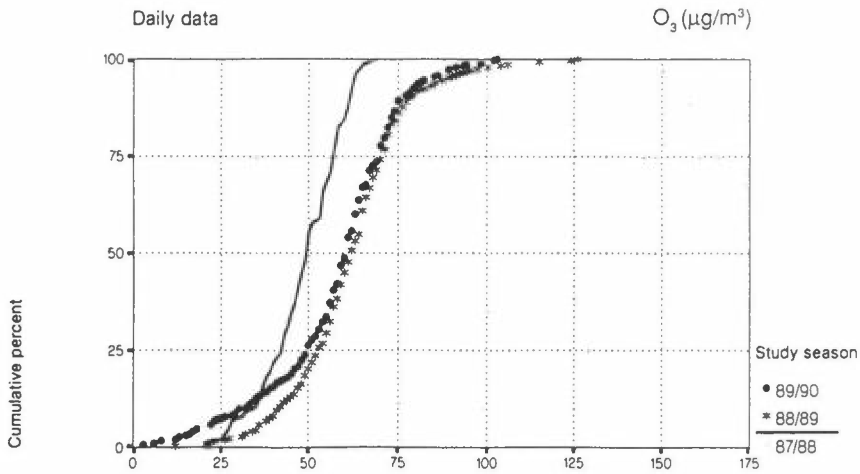


	Valid N
Site number 28	
UK Wells Cathedral	
Study year	
87-88	
SO2	321
NO2	
Ozone	
88-89	
SO2	349
NO2	3
Ozone	
89-90	
SO2	346
NO2	
Ozone	

SITE 29
UK Chatteringshaws Loch

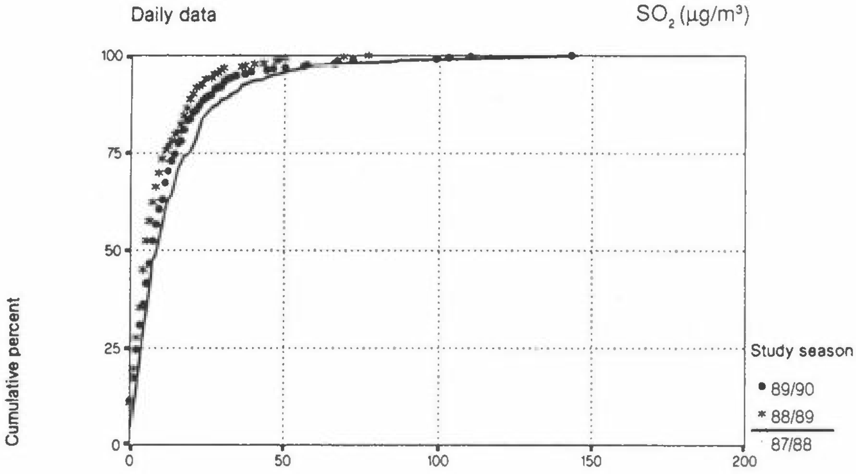






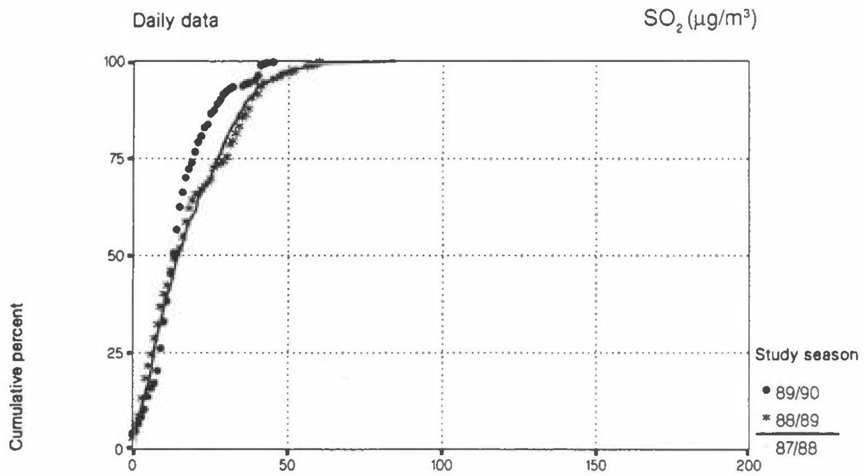
	Valid N
Site number 29	
UK Chatteringshaws Loch	
Study year	
87-88	
SO2	221
NO2	169
Ozone	86
88-89	
SO2	364
NO2	364
Ozone	295
89-90	
SO2	303
NO2	303
Ozone	303

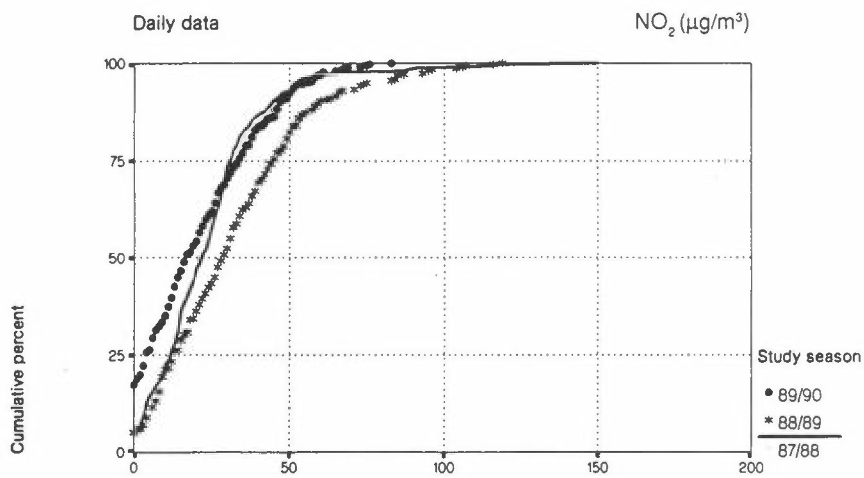
SITE 30
UK Stoke Orchard



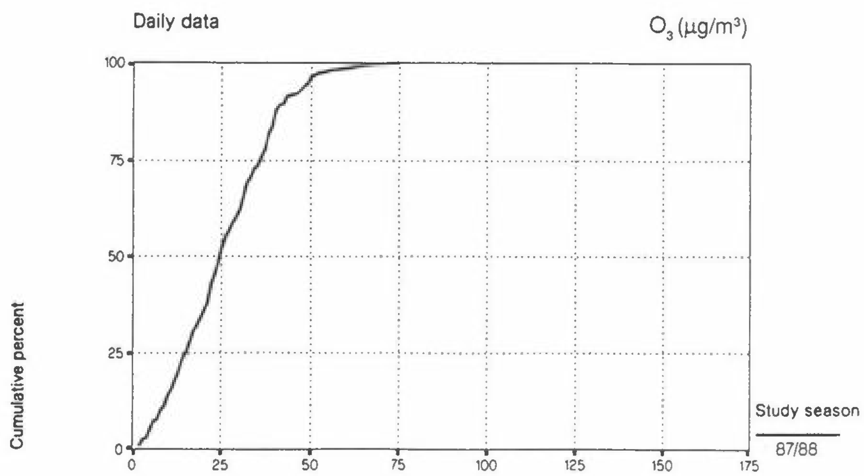
Site number 30	Valid N
UK Stoke Orchard	
Study year	
87-88	
SO2	344
NO2	
Ozone	
88-89	
SO2	312
NO2	
Ozone	
89-90	
SO2	331
NO2	
Ozone	

SITE 31
SPA Madrid



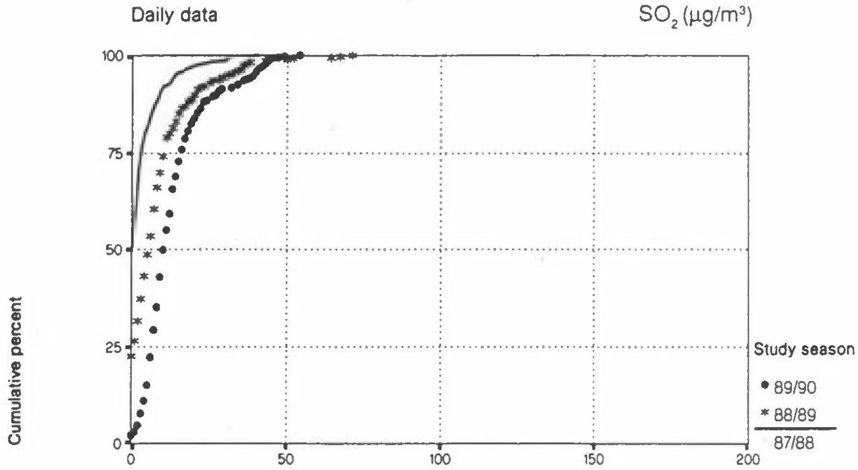


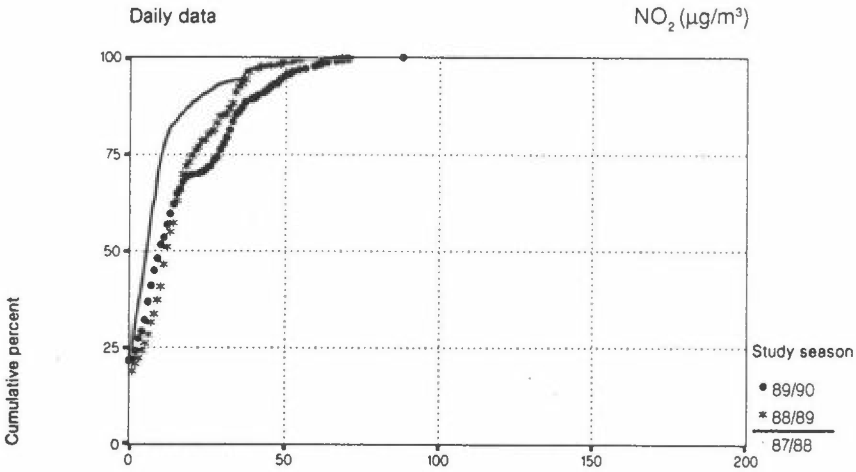
	Valid N
Site number 31	
SPA Madrid	
Study year	
87-88	
SO2	342
NO2	346
Ozone	270
88-89	
SO2	308
NO2	311
Ozone	
89-90	
SO2	365
NO2	350
Ozone	



	Valid N
Site number 32	
SPA Bilbao	
Study year	
87-88	
SO2	3
NO2	2
Ozone	
88-89	
SO2	
NO2	
Ozone	
89-90	
SO2	
NO2	
Ozone	

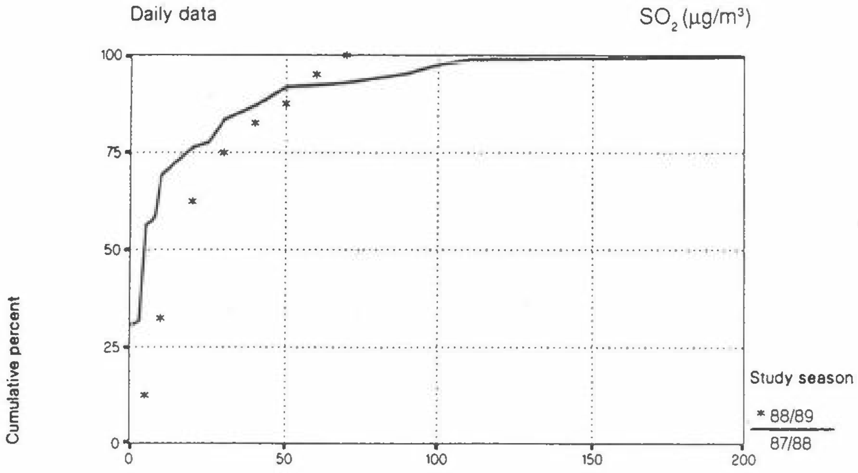
SITE 33
SPA Toledo

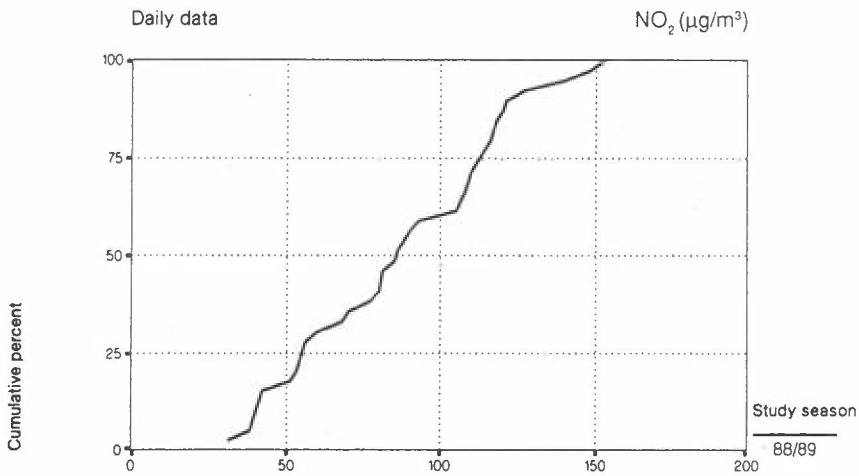




	Valid N
Site number 33	
SPA Toledo	
Study year	
87-88	
SO2	316
NO2	311
Ozone	
88-89	
SO2	357
NO2	358
Ozone	
89-90	
SO2	361
NO2	360
Ozone	

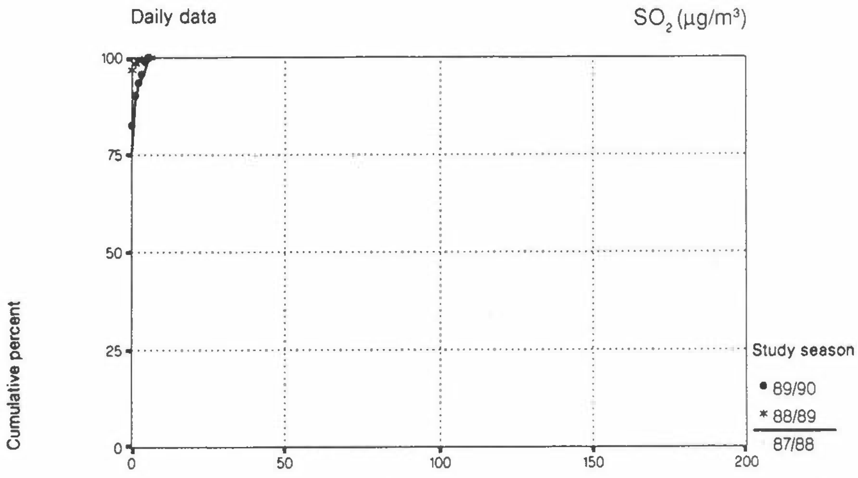
SITE 34
SOV Moscow

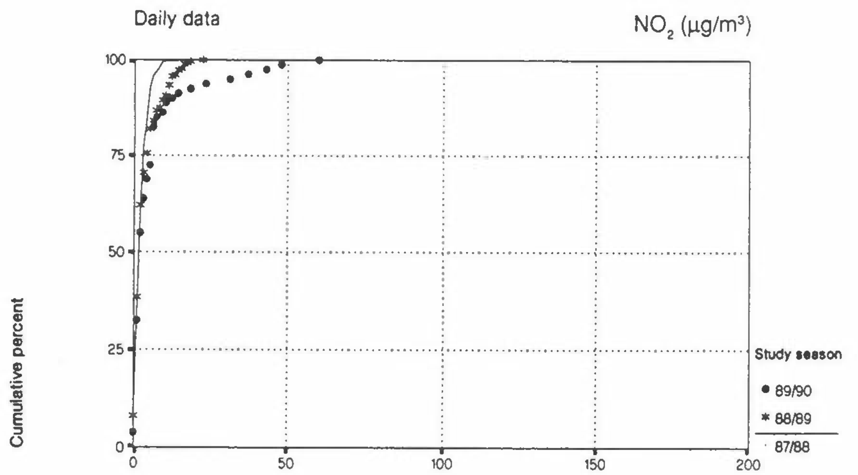




	Valid N
Site number 34	
SOV Moscow	
Study year	
87-88	
SO2	85
NO2	80
Ozone	
88-89	
SO2	40
NO2	39
Ozone	
89-90	
SO2	
NO2	
Ozone	

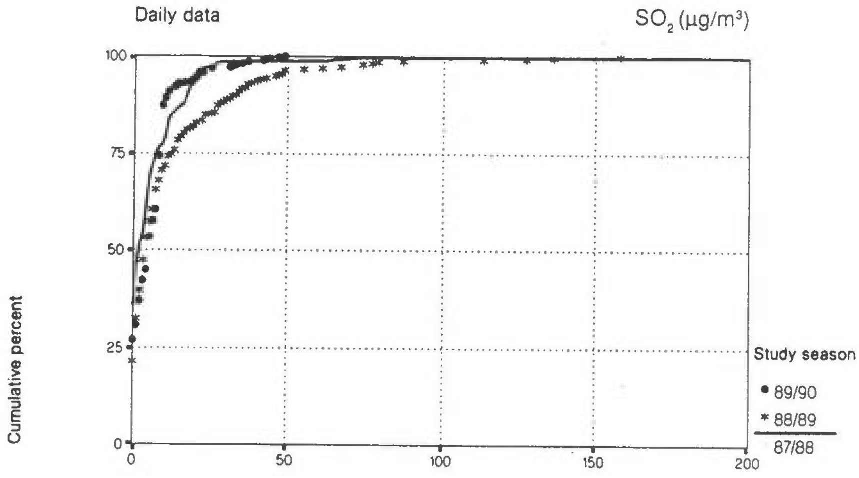
SITE 35
SOV Lahemaa

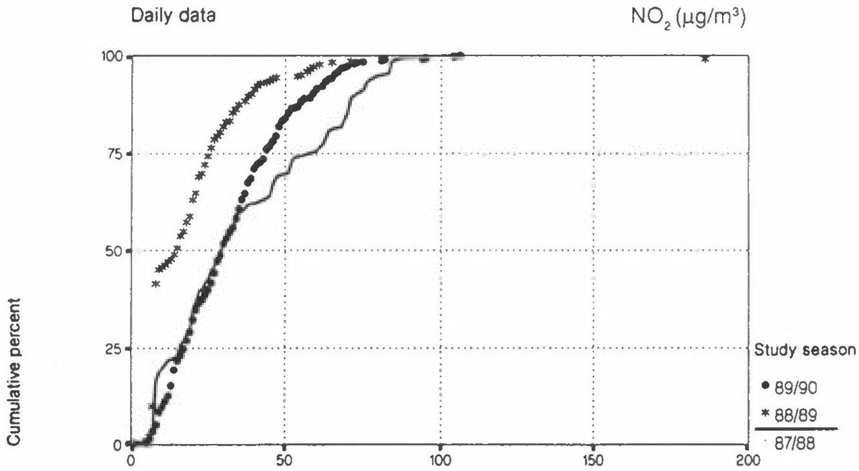




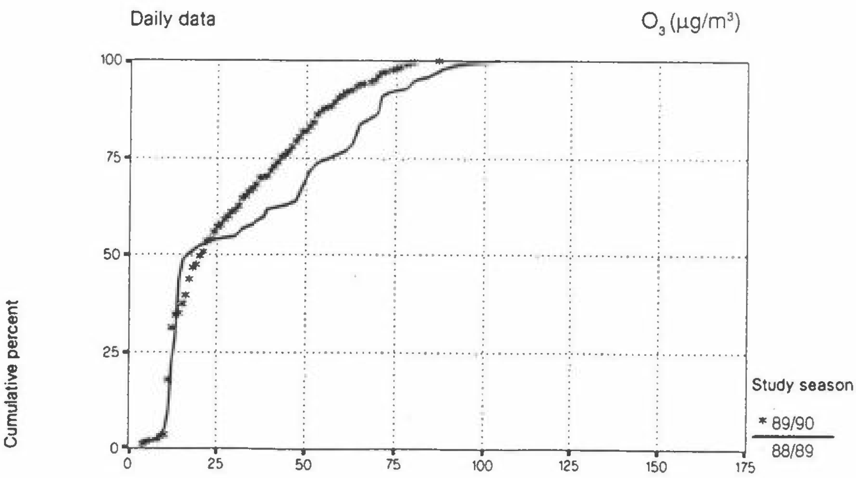
	Valid N
Site number 35	
SOV Lahemaa	
Study year	
87-88	
SO2	299
NO2	297
Ozone	
88-89	
SO2	253
NO2	258
Ozone	
89-90	
SO2	92
NO2	80
Ozone	

SITE 36
POR Lisbon-Jeronimo

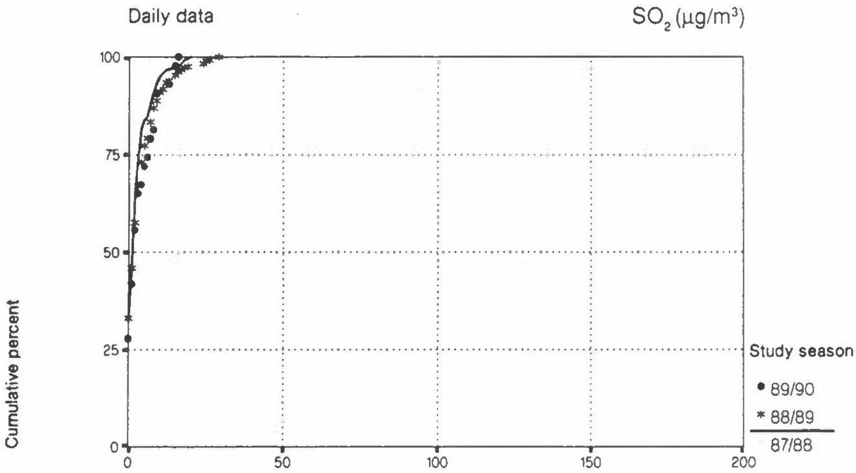




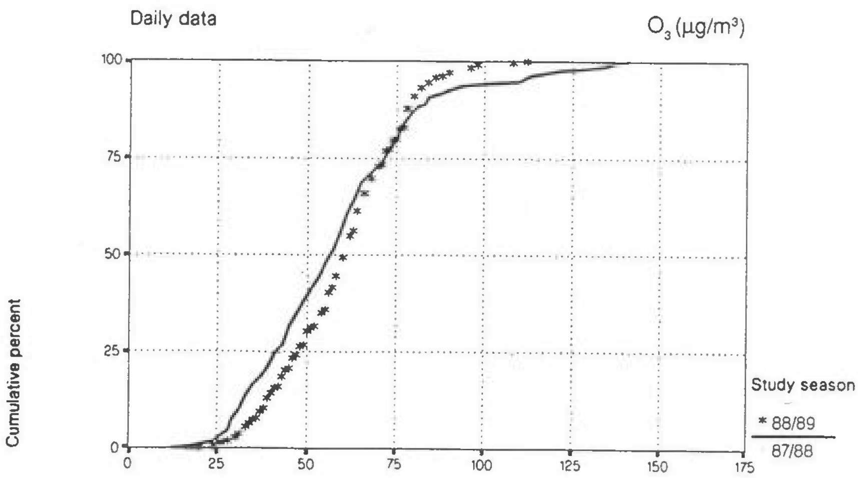
	Valid N
Site number 36	
POR Lisbon-Jeronimo	
Study year	
87-88	
SO2	347
NO2	326
Ozone	
88-89	
SO2	334
NO2	335
Ozone	100
89-90	
SO2	362
NO2	360
Ozone	364



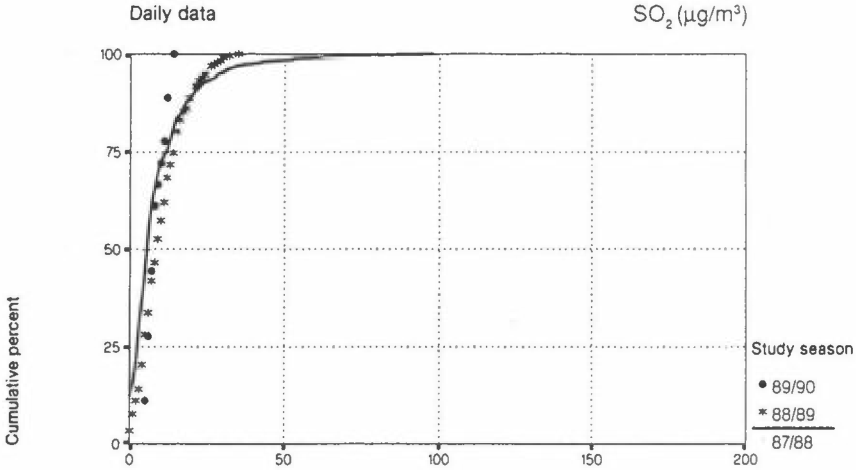
SITE 37
CAN Dorset

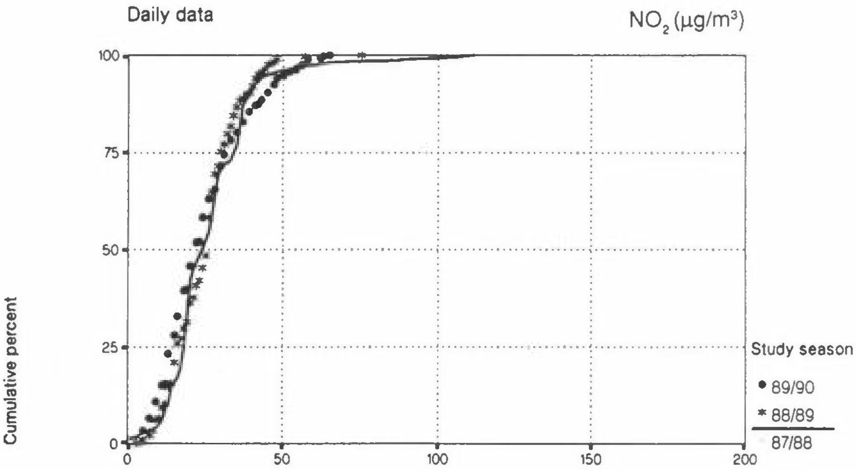


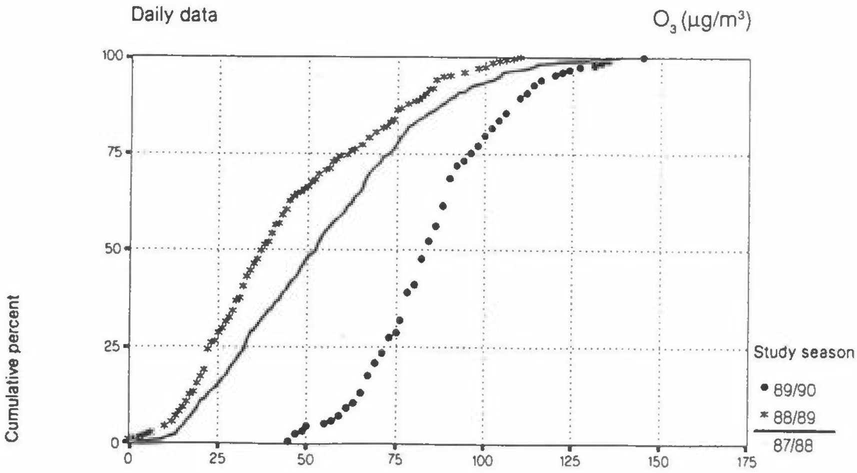
	Valid N
Site number 37	
CAN Dorset	
Study year	
87–88	
SO2	118
NO2	
Ozone	356
88–89	
SO2	361
NO2	
Ozone	231
89–90	
SO2	43
NO2	
Ozone	



SITE 38
USA Triangle Park

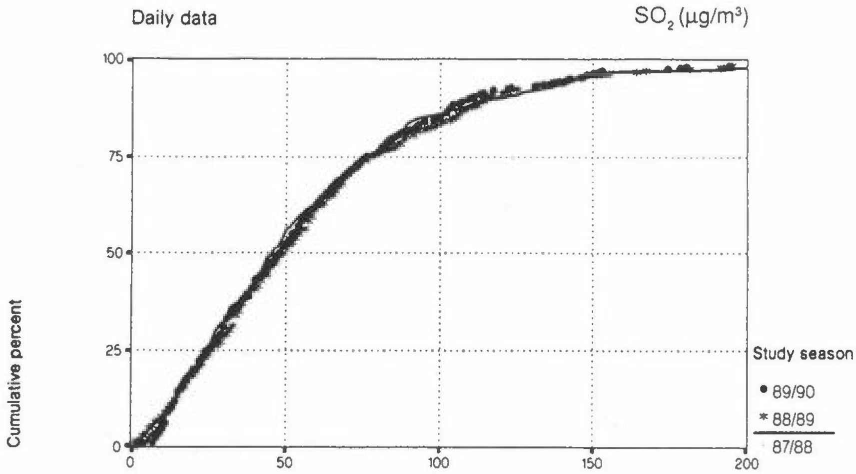


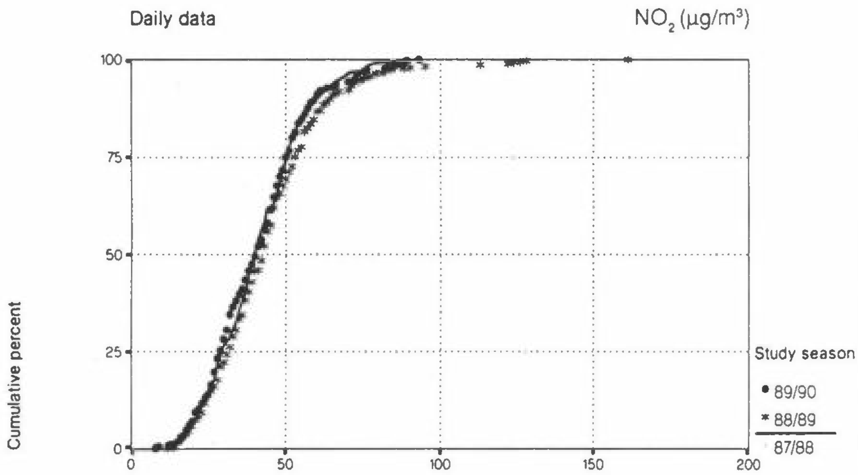


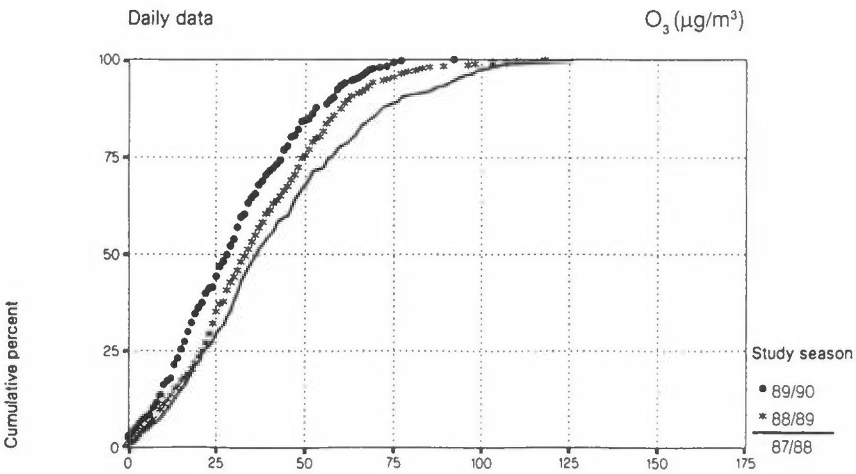


	Valid N
Site number 38	
USA Triangle Park	
Study year	
87-88	
SO2	365
NO2	365
Ozone	365
88-89	
SO2	234
NO2	304
Ozone	273
89-90	
SO2	18
NO2	365
Ozone	153

SITE 39
USA Steubenville







	Valid N
Site number 39	
USA Steubenville	
Study year	
87-88	
SO2	305
NO2	290
Ozone	305
88-89	
SO2	365
NO2	357
Ozone	359
89-90	
SO2	302
NO2	302
Ozone	302

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TITLE
ABSTRACT

The UN/ECE International Co-operative Programme on Effects on Materials, including Historic and Cultural Monuments have an extensive programme on material exposure in well defined environment. This report includes the environmental data from the third exposure year of temperature, relative humidity, time of wetness, sunshine hours, SO_2, NO_2 and O_3 concentrations and precipitation amount and quality. A statistical treatment of the data has been carried out.

* Kategorier: Åpen - kan bestilles fra NILU A
Må bestilles gjennom oppdragsgiver B
Kan ikke utleveres C