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Report on ozone, nitrogen dioxide
and peroxyacetyl nitrate

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SUMMARY

OXIDATE is a joint project of European OECD countries to collect and distribute regional data on ozone, nitrogen dioxide and PAN. These data can be of interest to those involved in assessing effects of oxidants, modelling the temporal and spatial distribution, and to others who are interested in photochemical oxidants in general. The OXIDATE project was started in 1985 under the OECD programme "Control of Major Air Pollutants (MAP)".

Each country has nominated a contact person and an institution responsible of collecting data. The data have been sent in a specified format to the project secretariat. The data are then redistributed on magnetic tape to all the participating countries. A summary report is made for each year giving a brief overview of the project organisation and the concentration levels.

In the third year of the project, data have been received from 36 measurement stations in these 11 countries: Austria, Belgium, Denmark, Federal Republic of Germany, Finland, France, Netherlands, Norway, Sweden, Switzerland and United Kingdom. Ozone was reported from 33 stations, nitrogen dioxide from 12 and PAN from three stations. There has been no centrally organised intercalibration or other data control activity. The measurement methods used were chemiluminescence or UV absorption for ozone, chemiluminescence for nitrogen dioxide and gas chromatography with electron capture detection for PAN.

As previous years, the highest ozone concentrations were measured in the eastern part of Austria (Illmitz), with the highest hourly concentration reaching $335 \mu\text{g}/\text{m}^3$. This maximum concentration is in comparison with the highest concentration in 1986 ($348 \mu\text{g}/\text{m}^3$) but lower than the maximum in 1985 ($446 \mu\text{g}/\text{m}^3$). In 1987, however, ozone concentrations were only available at Illmitz during a few weeks, making comparisons of extremes difficult.

The ozone data have indicated a gradient in ozone concentrations with lower levels in the north-western part and higher levels towards the central and south-eastern parts of Europe. This gradient was similar

to that of 1985 and 1986, but the gradient was weaker and also more difficult to determine for 1987.

The days with high ozone concentrations were distributed according to the air trajectory sectors. The distribution of sector directions for which high ozone concentrations were measured was in many cases significantly different from the distribution over the total half-year period.

There is a need to include more countries and measurement stations in the project in order to improve the understanding of the oxidant phenomenon. Data from East Europe and the Mediterranean area are of great interest in future European joint measurement programmes.

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1 INTRODUCTION

Episodes of high concentrations of ozone occur over north-western Europe every summer (Cox et al., 1975, Guicherit and van Dop, 1977, Schjoldager et al, 1981, Grennfelt and Schjoldager, 1984). During these episodes the ozone concentrations can reach values above ambient air quality standards over large regions.

The large scale oxidant phenomenon in Europe was first observed from measurements in southern England 1971 (Atkins et al., 1972). During an episode in June/July 1971 ozone concentrations in excess of $200 \mu\text{g}/\text{m}^3$ were observed in connection with high concentrations of particulate sulphate. The observations were made in a high pressure situation with light easterly winds. They suggested that the pollutants originated in continental Europe. The first assessment of ozone data from several stations in Europe was made by Guicherit and van Dop (1977). They examined four ozone episodes between 1971 and 1975 using data from the Federal Republic of Germany, France, Italy, Netherlands, Sweden and United Kingdom. A study of ozone episodes in north-western Europe was done for the years 1976-79 by Schjoldager et al. (1981). Data from 24 monitoring stations in 8 countries were collected and evaluated. The relations between photochemical oxidant episodes, large scale weather and air trajectories were analysed.

For data after 1980 Lübker et al. (1984) have published a report describing episodes with data from several countries. The report was a result of an OECD workshop in Schauinsland, Federal Republic of Germany, in October 1984. Three episodes were described, one from 1980

and two from 1982. The objective was to provide data for model validations. Besides these reports with data from several countries, a number of publications have appeared presenting and evaluating data from smaller regions.

Because of the regional scale of the photochemical oxidant phenomenon, a successful control of the oxidant problem will only be reached by joint efforts in several countries. At present, several research institutions are involved in modelling work on large scale oxidant formation and transport. Of particular interest is the Dutch-German PHOXA project (Photochemical Oxidant and Acid Deposition Model Application), and the work carried out in Norway within the framework of the European Monitoring and Evaluation Programme (EMEP) (Stern and Builtjes, 1986; Hov et al., 1985).

International bodies, e.g., ECE, EC and OECD, are concerned with abatement strategies. The OECD is currently finishing a programme on "Control of Major Air Pollutants (MAP)" on an international scale. The programme is concerned with long-range transport of air pollutants and large-scale formation of secondary atmospheric pollutants, particularly photochemical oxidants and their precursors. The programme involves several activities; emission inventories, assessment of ambient photochemical concentrations and their effects, implementation and refinement of models for formation and transport of oxidants, and compilation of data on techniques and costs for the control of emissions of nitrogen oxides and volatile organic compounds.

For the assessment of effects and for the model refinement and validation, a comprehensive data base on ambient air concentrations is necessary. Since no permanent or long term (i.e. several years) network have so far existed in Europe for the monitoring of photochemical oxidants, Norway and Sweden offered, during the OECD workshop in 1984, to collect data on ozone, NO_2 and PAN from the European OECD countries, and redistribute the data to the participating countries. The project was presented for the Air Management Policy Group (AMPG) at OECD in March 1985 and received general support. It was agreed to include the OXIDATE project in the OECD MAP programme.

The project is being carried out by the Swedish Environmental Research Institute (IVL) and the Norwegian Institute for Air Research (NILU). In 1985 and 1986, the project has been financed by the Swedish Environmental Protection Board (SNV) and the Norwegian State Pollution Control Authority (SFT). In 1987-89, economic support is given by the Nordic Council of Ministers (NMR).

The first project report, covering the period from April through September 1985, was issued in April 1987 (Grennfelt et al., 1987). The second report, covering the period from October 1985 through September 1986, was finished in May 1988 (Grennfelt et al., 1988).

2 ORGANISATION

Each country nominates an institution responsible for collecting national data and submitting them to the project secretariat. The list of contact persons and institutions is given in Table 1.

Table 1: List of contact persons and institutions, OXIDATE project, 1987.

COUNTRY	NAME, INSTITUTION	TELEPHONE
Austria	Dr. Ruth Baumann Umweltbundesamt Wien Abteilung für Lufthygiene Biberstrasse 11 A-1010 WIEN	43-222-43 2504
	Dipl.ing. Sporn Amt der Oberösterreichischer Landesregierung Goethestrasse 86 A-4020 LINZ	
Belgium	Dr. J. Beyloos Institute d'Hygiène et d'Epidémiologie 14, Rue Juliette Wytzman B-1050 BRUXELLES	32-2-642 5111
Denmark	Dr. Finn Palmgren Jensen Miljøstyrelsen, Luftforureningslaboratoriet Forsøgsanlæg Risø DK-4000 ROSKILDE	45-2-37 11 37
Federal Republic of Germany	Dr. Rolf Sartorius Umweltbundesamt Bismarckplatz 1 D-1000 BERLIN	49-30-8903 511
	Dr. Wolfgang Grosch Umweltbundesamt, Pilotstation Frankfurt Frankfurter Str. 135 D-6050 OFFENBACH	49-69-88 80 38
Finland	Mr. Heikki Lättilä Finnish Meteorological Institute (FMI) P.O.Box 50 SF-00810 HELSINKI	358-0-119 22
France	Dr. G. Toupance Laboratoire de Physicochimie de l'Environnement Université Paris Val de Marne Av. du Gal. de Gaulle F-94000 CRETEIL	33-14-898 9144
Netherlands	Dr. W.F. Blom Air Research Laboratory Rijksinstituut voor Volksgezondheid en Milieuhygiene Postbus 1 NL-3720 BA BILTHOVEN	31-30-74 91 11
Norway	Mr. Jørgen Schjoldager Norwegian Institute for Air Research (NILU) P.O.Box 64 N-2001 LILLESTRØM	47-6-81 41 70
Sweden	Mr. Peringe Grennfelt Swedish Environmental Research Institute (IVL) P.O.Box 47086 S-402 58 GÖTEBORG	46-31-46 00 80
Switzerland	Dr. R. Gehrig EMPA Überlandsstrasse 129 CH-8600 DUBENDORF	41-1-823 55 11
United Kingdom	Dr. B. Sweeney Air Pollution Division Warren Spring Laboratory Gunnels Wood Road, Stevenage Herts SG1 2BX, ENGLAND	44-438-74 11 22

These 11 countries have submitted data for the periods described in this report: Austria, Belgium, Denmark, Federal Republic of Germany, France, Finland, Netherlands, Norway, Sweden, Switzerland and United Kingdom.

3 MONITORING STATIONS

The total number of monitoring stations was 36. The stations are given in Tables 2 and 3, and on the map in Figure 1. 33 stations have reported ozone, 12 have reported nitrogen dioxide, and three stations have reported PAN data.

The monitoring stations in the project have been selected by the countries. All countries report that they have used either chemiluminescence or UV absorption for ozone monitoring, chemiluminescence for NO_2 , and gas chromatography with electron capture detection for PAN.

There have been substantial improvements in both monitoring and calibration techniques for ozone during the last 5-7 years. Most of the ozone data are probably of good quality.

With regard to NO_2 commercially available chemiluminescence instruments have a detection limit in the lower ppb level. PAN instruments need a quite careful inspection and maintenance. This may explain that only three stations have reported PAN.

In the project, no general intercalibration has been performed, nor has there been a general evaluation of the representativity of the stations for the purpose of the project, i.e., to study the regional extent of photochemical oxidants.

Table 2: Oxidant data collection in OECD-EUROPE 1985-1987 (OXIDATE).
List of stations, compounds and periods, October 1986-December 1987.

COUNTRY/STATION	COMPOUNDS			Winter half-year 1986-87	Summer half-year 1987	October- December 1987
	O ₃	NO ₂	PAN			
AUSTRIA						
Illmitz	x			13 Oct-31 Mar	25 Aug-30 Sep	1 Oct-31 Dec
Schöneben	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Schöneben		x		1 Oct-31 Mar	1 Apr-30 Sep	13 Oct-31 Dec
BELGIUM						
Gent, St. Kruiswinkel	x	x		1 Oct-31 Mar		
St. Denijs	x			1 Oct-31 Mar	1 Apr-26 Sep	20 Nov-31 Dec
St. Denijs		x		1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Offagne	x			8 Oct-28 Mar	7 Apr-30 Sep	1 Oct-18 Dec
Offagne		x		1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
DENMARK						
Ulborg	x			18 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
FED. REP. OF GERMANY						
Brotjacklriegel	x			1 Oct-10 Mar	12 May-30 Sep	1 Oct-31 Dec
Deuselbach	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Langenbrügge-Waldhof	x			1 Oct-31 Mar	1 Apr-30 Sep	10 Oct-31 Dec
Schauinsland	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Westerland	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
FINLAND						
Utö	x	x		1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Ahtäri	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Ahtäri		x		12-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
FRANCE						
Creteil			x	1 Oct-31 Mar	1 Apr-24 Jun	
Donon			x	1 Oct-31 Mar	1 Apr-30 Sep	1-12 Oct
NETHERLANDS						
Delft			x	1 Oct-31 Mar	1 Apr-21 Sep	1-5 Oct
Eibergen	x	x		1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Witteveen	x			1 Oct-23 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Witteveen		x		1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
NORWAY						
Birkenes	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Jeløya	x				6 Apr-30 Sep	
Langesund	x				2 Apr-30 Sep	
Svanvik	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
SWEDEN						
Aspvreten	x			10 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Norra Kvill	x			1 Oct-31 Mar	1 Apr-15 Sep	1 Oct-31 Dec
Ringamåla-Sännen	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Rörvik	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Vavihill	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Vindeln	x			4 Dec-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Ammarnäs	x			1 Oct-31 Mar	1 Apr-29 Sep	5 Oct-28 Dec
Stormyrsberget-	x			1 Oct-31 Mar	4 Apr-30 Sep	1 Oct-16 Nov
Storulvsjön	x					19 Nov-31 Dec
SWITZERLAND						
Payerne	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-28 Nov
Payerne		x		1 Oct-30 Mar	15 Apr-30 Sep	1 Oct-31 Dec
Sion	x	x		1-16 Oct	8 Apr-30 Sep	1 Oct-31 Dec
Tänikon	x			1 Oct-31 Dec	15 Apr-30 Sep	1 Oct- 4 Dec
Tänikon		x		1 Oct-31 Dec	15 Apr-30 Sep	1 Oct-18 Dec
UNITED KINGDOM						
Harwell	x			1 Oct-31 Mar	1 Apr-30 Sep	1 Oct-31 Dec
Harwell		x		1 Oct-31 Mar	1 Apr-30 Sep	1-9 Oct
Sibton	x				28 Apr-30 Sep	1 Oct-29 Dec

Table 3: List of latitude, longitude and altitude of the OXIDATE stations, October 1986-December 1987. The station codes refer to Figure 1 only, and are not equivalent to the EMEP station codes.

STATION NAME	LATITUDE	LONGITUDE	ALTITUDE (m)
A1 Illmitz	47 46 N	16 46 E	117
A2 Schöneben	48 42 43 N	13 57 2 E	920
B1 Gent, St. Kruiswinkel	51 9 N	3 49 E	5
B2 St. Denijs	50 45 N	3 22 E	42
B3 Offagne	49 53 N	5 12 E	430
DK1 Ulborg	56 17 N	8 26 E	37
D1 Brotjacklriegel	48 49 10 N	13 13 9 E	1016
D2 Deuselbach	49 45 53 N	7 3 7 E	480
D3 Langenbrügge-Waldhof	52 48 8 N	10 45 34 E	73
D4 Schauinsland	47 54 53 N	7 54 31 E	1205
D5 Westerland	54 55 32 N	8 18 35 E	12
SF1 Utö	59 47 N	21 23 E	10
SF2 Ahtäri	62 32 N	24 13 E	157
F1 Creteil	48 47 14 N	2 27 06 E	49
F2 Donon	48 30 23 N	7 9 2 E	750
NL1 Delft	52 0 N	4 23 E	-2
NL2 Eibergen	52 6 N	6 36 E	20
NL3 Witteveen	52 49 N	6 40 E	16
N1 Birkenes	58 23 N	8 15 E	190
N2 Jeløya	59 26 N	10 36 E	3
N3 Langesund	59 1 N	9 45 E	5
N4 Svanvik	69 27 N	30 2 E	30
S1 Aspvreten	58 48 N	17 23 E	20
S2 Norra Kivill	57 49 N	15 34 E	261
S3 Ringamåla-Sännen	56 20 N	15 20 E	90
S4 Rörvik	57 25 N	11 56 E	10
S5 Vavihill	56 1 N	13 9 E	175
S6 Vindeln	64 15 N	19 46 E	225
S7 Ammarnäs	65 58 N	16 12 E	480
S8 Stormyrsberget-	62 14 N	16 16 E	375
Storulvsjön	62 16 N	16 18 E	420
CH1 Payerne	46 49 N	6 57 E	500
CH2 Sion	46 13 N	7 20 E	480
CH3 Tänikon	47 29 N	8 54 E	540
UK1 Harwell	51 25 N	1 19 W	137
UK2 Sibton	52 18 N	1 28 E	46

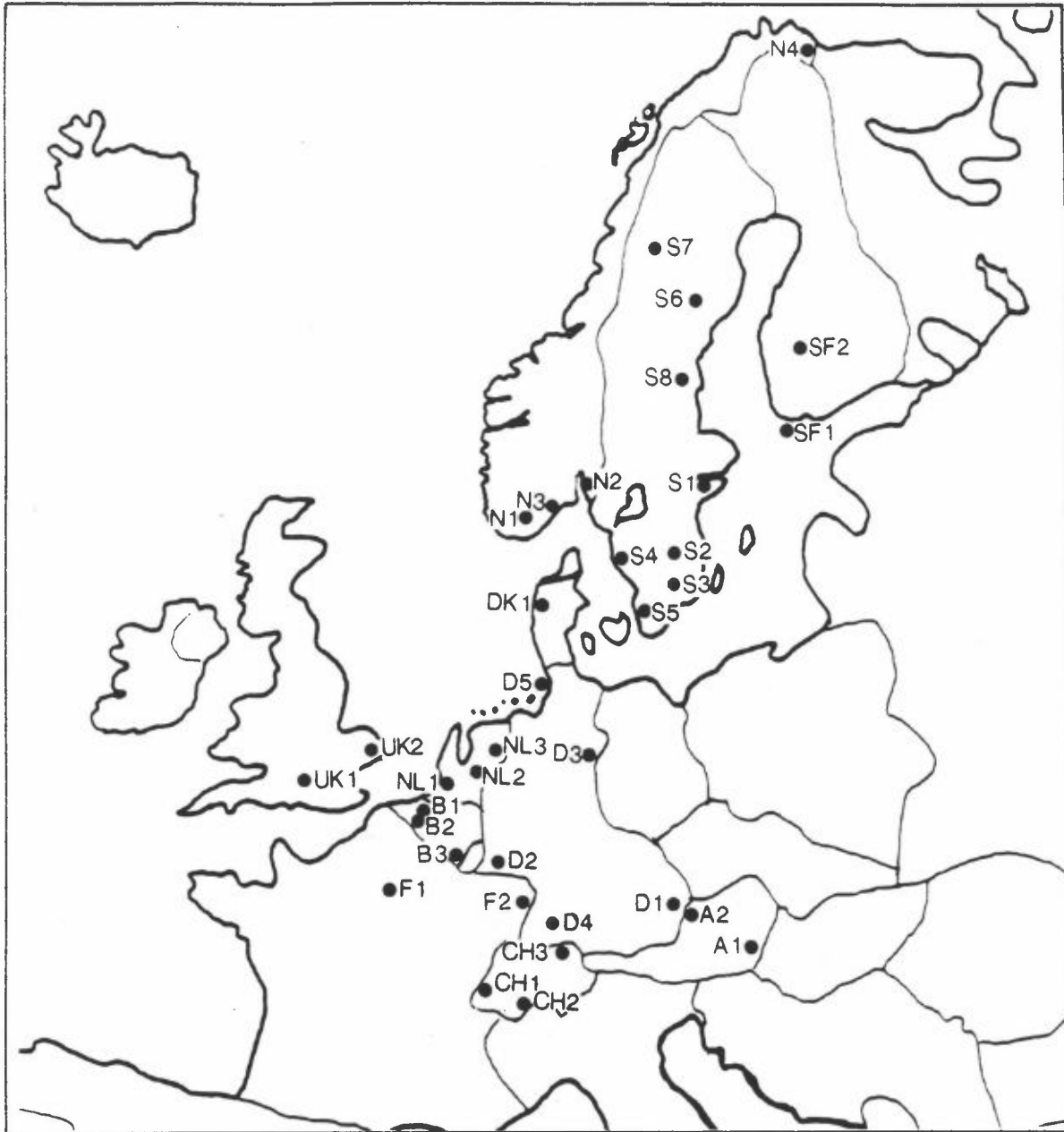


Figure 1: Map of measurement stations in the OXIDATE project, October 1986-December 1987.
(Station codes refer to Table 3 only.)

4 SUMMARY OF RESULTS

4.1 EXTREME CONCENTRATIONS AND EXCEEDING OF CONCENTRATION LIMITS

Tables of the dates and the number of days and hours with hourly concentrations above certain limits are given for ozone, nitrogen dioxide and PAN in Appendix A-C.

Winter

During the winter periods the highest hourly ozone concentration was $330 \mu\text{g}/\text{m}^3$ (Payerne, Switzerland, 5 October 1986), and the highest daily ozone concentration was $185 \mu\text{g}/\text{m}^3$ (Illmitz, Austria, 6 October 1987).

The highest hourly NO_2 concentration was $691 \mu\text{g}/\text{m}^3$, and the highest daily NO_2 concentration was $456 \mu\text{g}/\text{m}^3$, measured at Harwell (United Kingdom) 8 March 1987.

The highest hourly PAN concentration in the winter periods was $45 \mu\text{g}/\text{m}^3$, measured at Delft (Netherlands) 1 October 1986. The highest daily PAN concentration was $25 \mu\text{g}/\text{m}^3$, measured at Delft (Netherlands) 13 March 1987.

Summer

For the summer half-year table 4 gives the number of hours and days with hourly ozone concentrations exceeding the concentration limits of 120, 150, 200, 240 and $280 \mu\text{g}/\text{m}^3$. Two stations, Svanvik (Norway) and Ammarnäs (Sweden), had no hourly concentrations exceeding $120 \mu\text{g}/\text{m}^3$. Two stations had hourly concentrations above $240 \mu\text{g}/\text{m}^3$. These were Illmitz (Austria) and Payerne (Switzerland).

During the summer half-year, the highest hourly ozone concentration was $335 \mu\text{g}/\text{m}^3$, and the highest daily concentration was $209 \mu\text{g}/\text{m}^3$, measured at Illmitz (Austria) on 31 August 1987 and 28 August 1987, respectively.

The highest hourly NO_2 concentration was $258 \mu\text{g}/\text{m}^3$ (Payerne, Switzerland, 16 September 1987), and the highest daily concentration was $65 \mu\text{g}/\text{m}^3$, measured at Harwell (United Kingdom) on 24 April 1987.

The highest hourly PAN concentration was $33 \mu\text{g}/\text{m}^3$ (Delft, Netherlands, 1 September 1987), and the highest daily concentration was $13 \mu\text{g}/\text{m}^3$, measured on 21 August 1987 at Delft (Netherlands).

Table 4: Number of hours (h) and days (d) with hourly ozone concentrations exceeding 120, 150, 200, 240 and 280 $\mu\text{g}/\text{m}^3$, and maximum hourly and daily ozone concentration ($\mu\text{g}/\text{m}^3$), April-September 1987.

STATION	Number of hours and days												Maximum ozone concentrations	
	Total		>120		>150		>200		>240		>280		$(\mu\text{g}/\text{m}^3)$	
	h	d	h	d	h	d	h	d	h	d	h	d	h	d
Illmitz	541	23	287	23	216	22	122	18	47	8	17	5	335	209
Schöneben	4243	180	290	47	26	8							177	132
St. Denijs	3450	152	79	18	26	5	1	1					207	121
Offagne	2320	107	18	4	4	2							171	102
Ulborg	3910	167	63	12	13	5							182	109
Brotjacklriegel	3276	138	655	63	63	16							192	151
Deuselbach	4381	183	206	31	60	11	2	1					206	155
Langenbrügge-Waldhof	3976	167	262	43	93	16	4	3					210	141
Schauinsland	4333	183	691	63	133	23							196	150
Westerland	4261	178	110	18	32	6	3	1					222	142
Utö	3394	155	147	19	20	3							169	153
Ahtari	3717	162	85	10	13	2							185	136
Eibergen	4121	172	143	28	38	7	5	1					222	121
Witteveen	4088	170	112	19	48	12	8	1					219	123
Birkenes	3581	151	111	12	22	3							196	137
Jeløya	4166	173	133	23	6	3							170	121
Langesund	4134	173	50	9	2	2							171	125
Svanvik	4374	183											120	90
Aspvreten	4373	183	31	5									142	118
Norra Kvill	3928	166	111	14	23	6							184	139
Sännen	3722	158	28	5									144	106
Rörvik	3662	160	10	3									128	108
Vavihill	4381	183	89	15	17	4							188	127
Vindeln	4379	183	12	2									148	105
Amarnäs	4275	179											116	106
Stormyrsberget	4172	174	6	1									128	89
Payerne	4380	183	234	47	44	15	7	3	1	1			252	96
Sion	3462	144	150	35	3	3	1	1					238	90
Tänikon	3303	140	84	24	5	2							180	101
Harwell	3625	151	51	9	12	4	1	1					214	107
Sibton	3291	142	46	9	7	1							200	111

4.2 MONTHLY MEAN CONCENTRATIONS

The monthly mean ozone concentrations are given in Tables 5a and 5b for the winter half-year and the summer half-year, respectively. The monthly mean concentrations at Brotjacklriegel and Schauinsland (Federal Republic of Germany) were relatively high, with some of the monthly mean values equal to or exceeding $100 \mu\text{g}/\text{m}^3$.

Table 5a: Monthly mean ozone concentrations ($\mu\text{g}/\text{m}^3$), October-December 1986.

Number in parenthesis: 10-20 daily values, no numbers: less than 10 daily values.

STATION	Oct	Nov	Dec
Illmitz	(85)	43	61
Schöneben	66	44	44
Gent, St.Kruiswinkel	26	25	22
St. Denijs	29	(19)	22
Offagne	(35)		36
Ulborg	(43)	47	39
Brotjacklriegel	73	51	49
Deuselbach	39	34	31
Langenbrügge-Waldhof	32	28	32
Schauinsland	85	71	62
Westerland	62	53	47
Utö	66	57	42
Ahtari	45	46	41
Eibergen	19	22	21
Witteveen	23	25	36
Birkenes	47	52	44
Svanvik	36	37	37
Aspvreten	50	52	41
Norra Kvill	48	45	
Sännen	32	31	31
Rörvik	49	(73)	36
Vavihill	41	34	36
Vindeln			(46)
Ammarnäs	28	39	52
Stormyrsberget	46	40	37
Payerne	83	28	(17)
Sion	(28)		
Tänikon	29	17	24
Harwell	37	42	40

Table 5b: Monthly mean ozone concentrations ($\mu\text{g}/\text{m}^3$), 1987.
 Number in parenthesis: 10-20 daily values, no numbers: less than 10 daily values.

STATION	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Illmitz	82	65	105						(118)	92	62	67
Schöneben	47	52	82	90	90	82	89	71	67	52	43	41
Gent. St.Kruiswinkel	11	14	23									
St. Denijs	11	19	31	48	(51)	(35)	49	42	26			23
Offagne	(19)	21		(66)	59	(27)			23	32	26	(21)
Ulborg	46	38	61	73	(81)	72	62	57	47	38	23	33
Brotjacklriegel	47	51	(69)		104	103	114	96	83	67	(64)	19
Deuselbach	20	25	57	72	67	54	69	68	70	44	33	27
Langenbrügge-Waldhof	40	43	73	75	84	56	52	58	42	39	27	29
Schauinsland	49	54	77	100	94	89	107	89	86	66	57	62
Westerland	49	38	62	71	87	76	70	72	56	33	38	31
Utö	47	(52)	91	97	87	90	77	67	56	60	50	57
Ahtari	30	51	81	90	79	63	42	39	31	41	30	41
Eibergen	18	20	45	54	65	64	61	43	33	24	18	14
Witteveen	27	22	(53)	60	70	56	(61)	43	33	23	20	18
Birkenes	57	59	82	89	83	69	67		47	(47)	38	50
Jeløya				76	92	83	76	61	60			
Langesund				80	67	62	57	57	50			
Svanvik	41	43	68	71	64	58	43	41	32	50	48	46
Aspvreten	46	(50)	64	79	66	59	46	40	39		32	35
Norra Kvill	46	49	85	83	76	77	67	41	(38)	48	36	48
Ringamåla-Sännen	33	36	(58)	73	(67)	52	34	38	35	30	21	30
Rörvik	39	43	63	70	70	70	59	54	53	45	25	35
Vavihill	44	38	76	80	77	68	60	50	49	46	32	37
Vindeln	48	53	74	83	74	65	49	43	38	42	43	63
Ammarnäs	40	47	43	89	81	59	47	43	44	55	56	72
Stommysberget	38	34	26	73	60	44	36	33	31	36	(43)	
Storulvsjön											(36)	58
Payerne		28	57	70	58	54	60	54	45	19	22	
Sion				72	67	55	59	(54)	29	12	10	3
Tänikon				(69)	63	58	(56)	47	47	21	20	
Harwell	21	26	43	63	60	50	35	36	(35)	34	(38)	36
Sibton					66	52	56	45	37	35	26	27

The monthly mean NO₂-concentrations are given in Table 6a and 6b.

Table 6a: Monthly mean NO₂-concentrations (µg/m³), October-December 1986.

Numbers in parenthesis: 10-20 daily values, no numbers: less than 10 daily values.

STATION	Oct	Nov	Dec
Schöneben	9	11	12
Gent, St. Kruiswinkel	(26)	28	(29)
St. Denijs	61	31	25
Offagne	(18)	9	10
Utö	5	6	6
Eibergen	38	35	30
Witteveen	28	33	24
Payerne	25	33	26
Sion	(30)		
Tänikon	33	(29)	13
Harwell	22		

Table 6b: Monthly mean NO₂-concentrations (µg/m³), 1987.

Numbers in parenthesis: 10-20 daily values, no numbers: less than 10 daily values.

STATION	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Schöneben	23	19	19	11	6	(4)	(4)	(10)	10	(13)	17	15
Gent, St. Kruiswinkel	43	48	45									
St. Denijs	47	45	43	34	28	22	22	16	20		(40)	44
Offagne	28	28		(9)	10	(4)		(12)	(12)	19	13	(11)
Utö		(9)	8	(6)	(6)	(7)	4	5	(8)	6	(6)	5
Ahtari			(6)	5	3	(3)	4	2	2	3	6	8
Eibergen	35	31	31	34	15	17	16	17	22	28	26	29
Witteveen	24	32	19	20	10	11	12	12	18	28	26	29
Payerne	38	29	19	(29)	10	8	13	15	20	25	25	35
Sion				26	24	14	13		(35)	33	37	47
Tänikon				(25)	13	9	(14)	13	18	26	29	(29)
Harwell	(59)	46	80	34	(31)	24	19	(21)	20			

4.3 CUMULATIVE FREQUENCY DISTRIBUTIONS

The cumulative frequency distributions for ozone and nitrogen dioxide are given in Appendix D for the summer half-year April-September 1987. Many stations show a near log-normal distribution in the higher range of the concentrations indicated by near straight lines in the graphs.

The 90, 95 and 98 percentiles of the summer half-year ozone concentrations are given in Figures 2-4 for the different stations. The highest percentile concentrations were experienced at Brotjacklriegel and Schauinsland (Federal Republic of Germany).

Some "percentile isopleths" are indicated on the maps. These are extremely uncertain, partly because of the limited number of stations. As in the previous report, it has been difficult to determine the eastern and southern ends of the isopleths. Also, some nearby pairs of stations, like Schöneben/Brotjacklriegel and Schauinsland/Tänikon make it difficult to determine the isopleths.

The concentration pattern indicates a northeast to southwest ozone concentration gradient in Europe. This gradient seems, however, to be weaker in 1987 than in the two previous years. In 1987 there was slightly higher ozone concentrations in Norway than in Denmark and Sweden, and the concentrations in Switzerland were generally lower than in 1986.

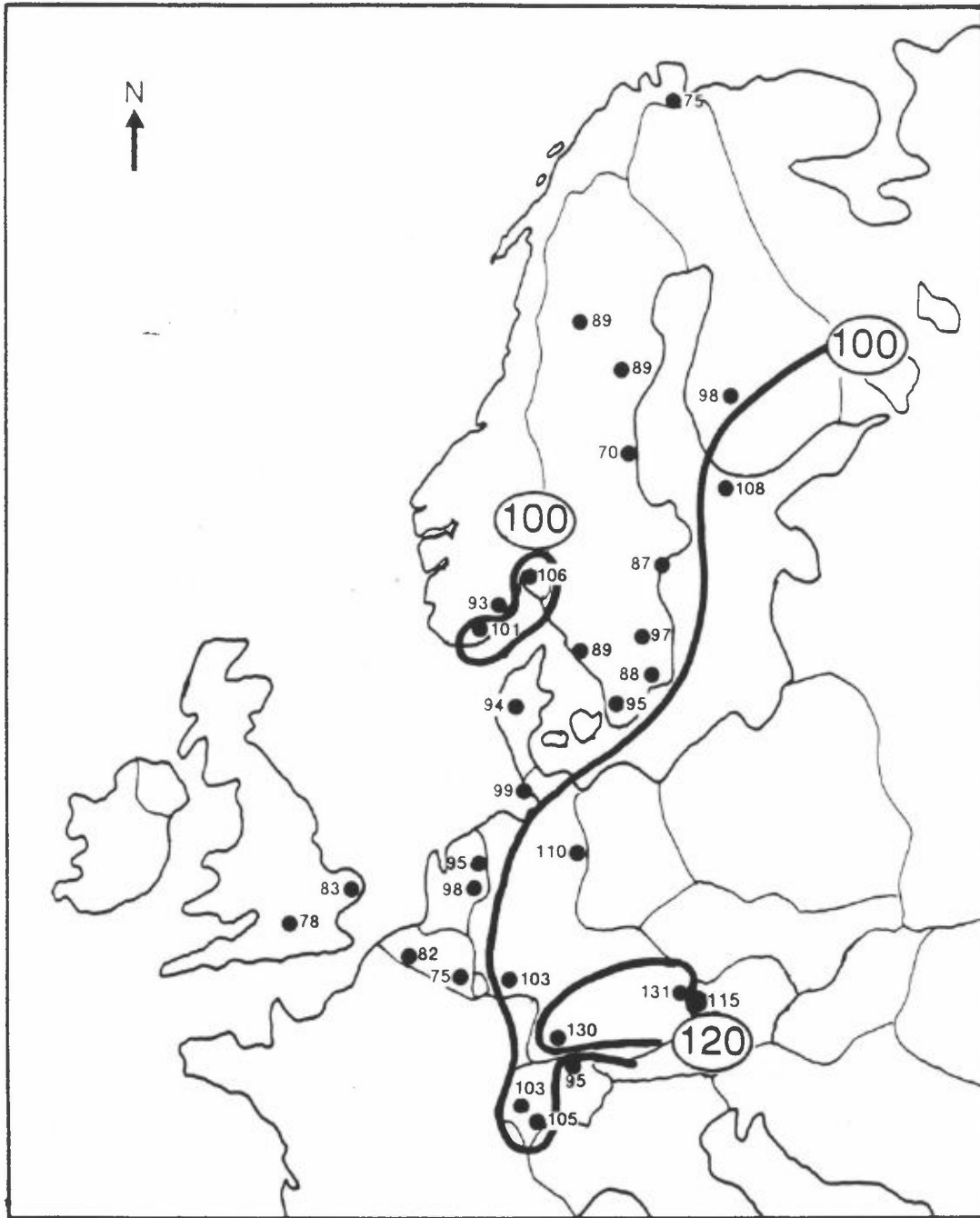


Figure 2: 90 percentile of ozone concentrations ($\mu\text{g}/\text{m}^3$), April - September 1987.

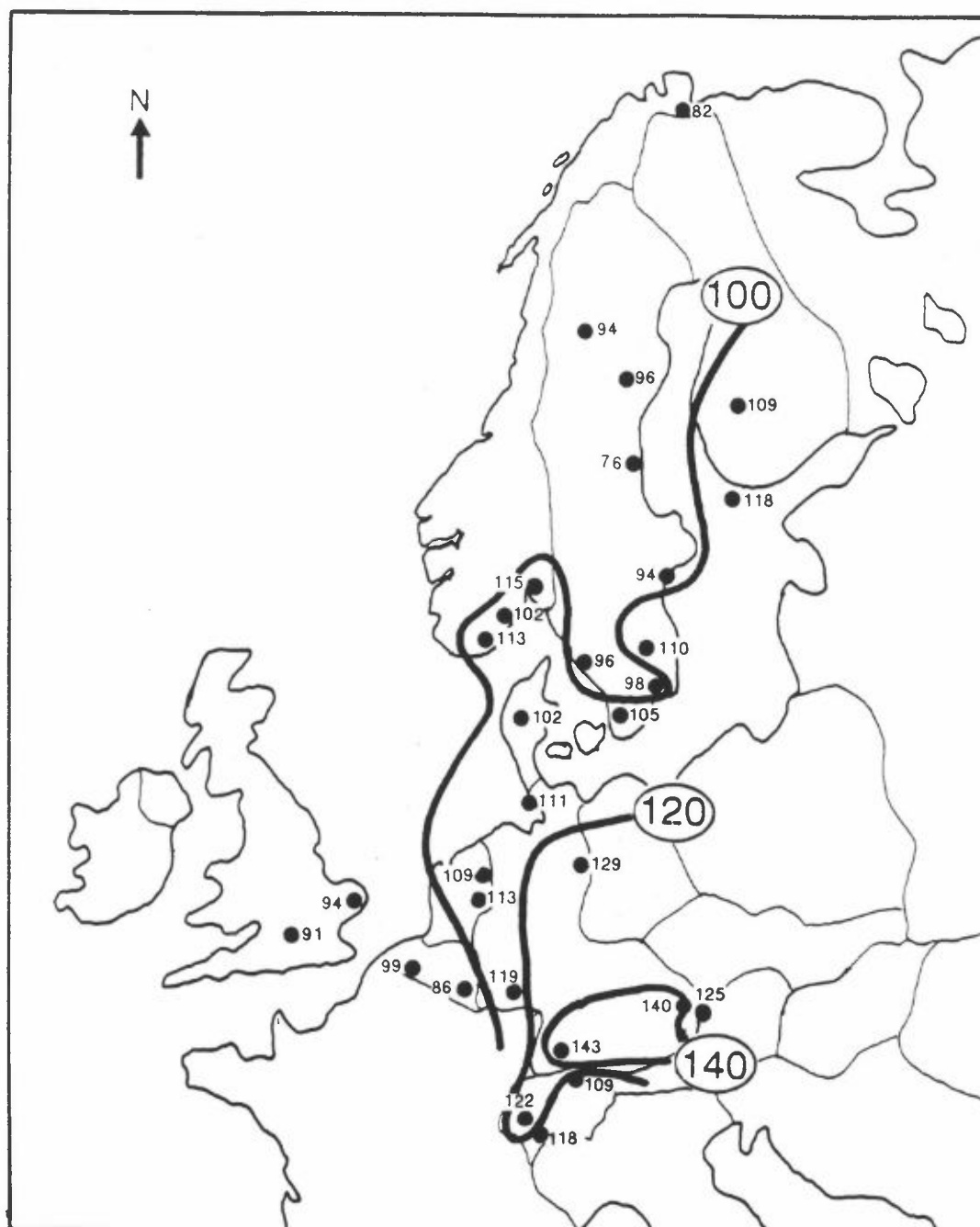


Figure 3: 95 percentile of ozone concentrations ($\mu\text{g}/\text{m}^3$), April - September 1987.

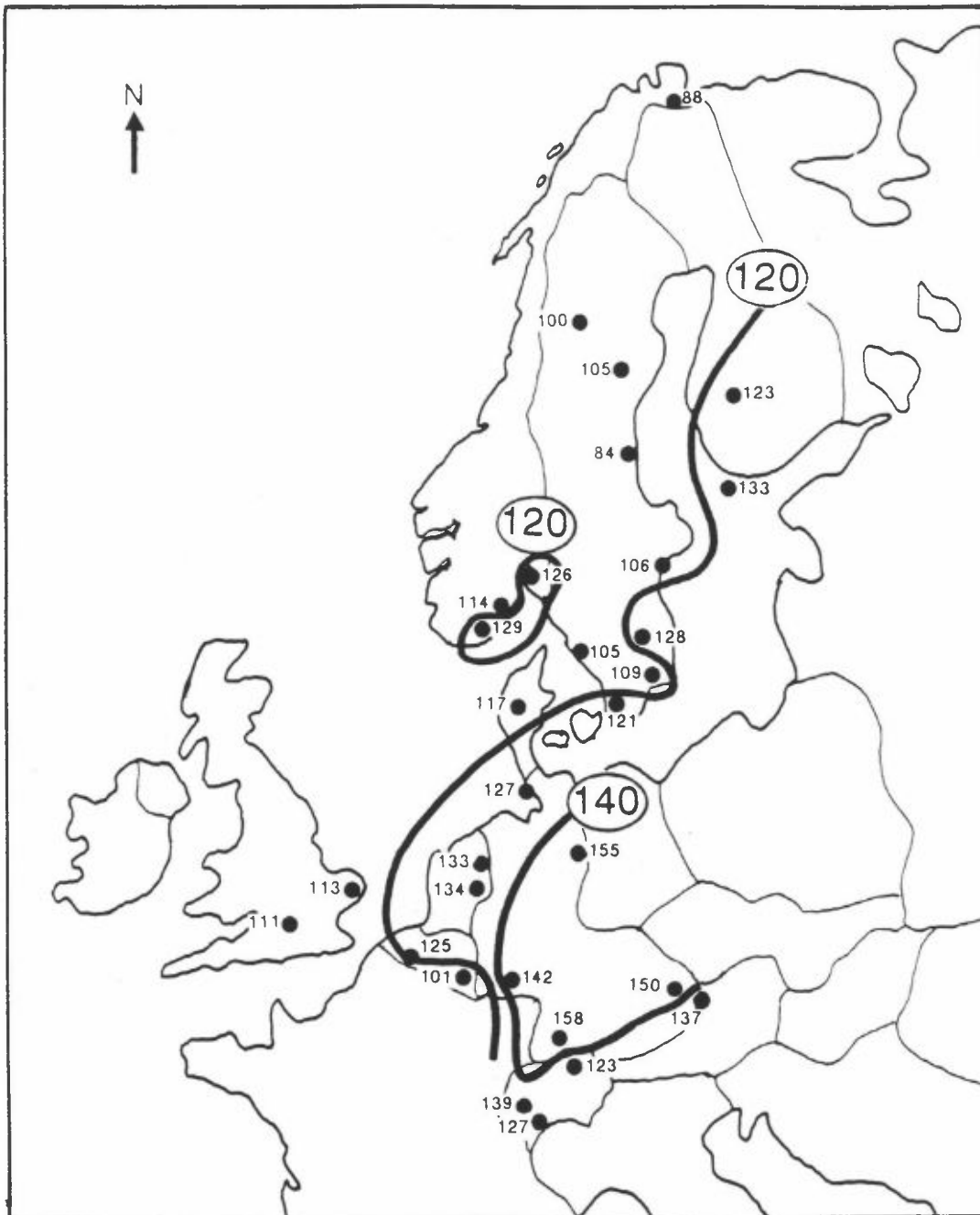


Figure 4: 98 percentile of ozone concentrations ($\mu\text{g}/\text{m}^3$), April - September 1987.

4.4 MEAN DIURNAL CONCENTRATION VARIATIONS

The mean diurnal concentration distributions of ozone and nitrogen dioxide and PAN for the winter half-year are given in Appendix E.

For the summer half-year the mean diurnal concentration distributions of ozone, nitrogen dioxide and PAN are given in Figures 5-6. For ozone, most stations exhibited the well-documented "unimodal" distribution with lowest concentrations during the night and highest concentrations during the afternoon hours. The highest mean concentrations were recorded at Schauinsland and Brotjacklriegel.

Also in agreement with the findings of the previous years, there were smaller concentration variations for coastal stations like Westerland (Federal Republic of Germany) and Utö (Finland), and hilltop stations like Schauinsland and Brotjacklriegel (Federal Republic of Germany) than for most other stations.

The diurnal NO₂ concentration variations showed the "bimodal" distribution for some of the stations, particularly St. Denijs (Belgium) and the three Swiss stations. Eibergen (Netherlands) had a different distribution with higher concentrations during nighttime than daytime hours. The two Finnish stations and Schöneben (Austria) had very small diurnal variations.

The diurnal PAN concentration variations at Creteil (France) and Delft (Netherlands) were similar to most of the ozone concentration distributions, while Donon (France) had small diurnal variations.

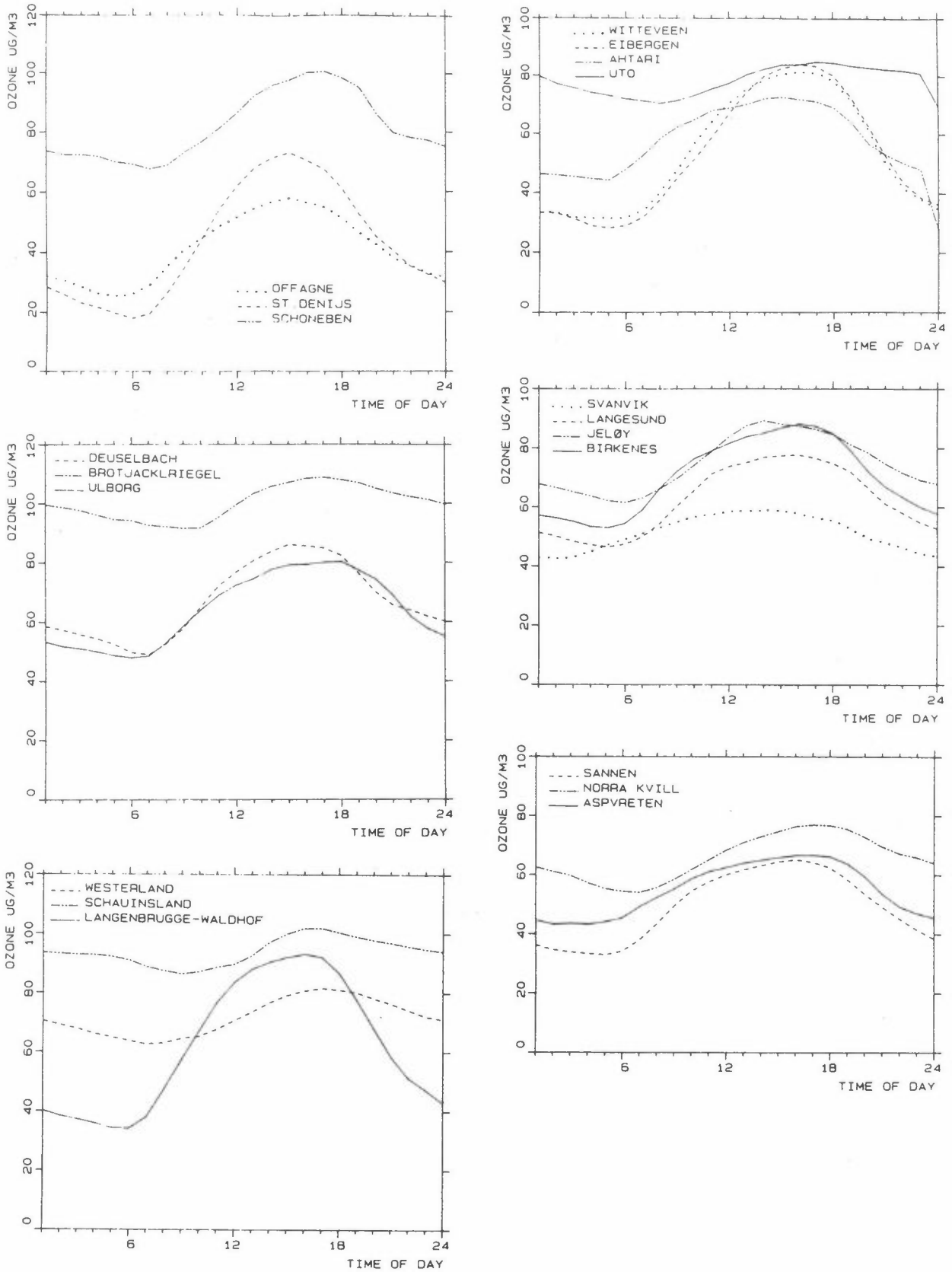


Figure 5: Mean diurnal concentration distributions for ozone, April-September 1987.

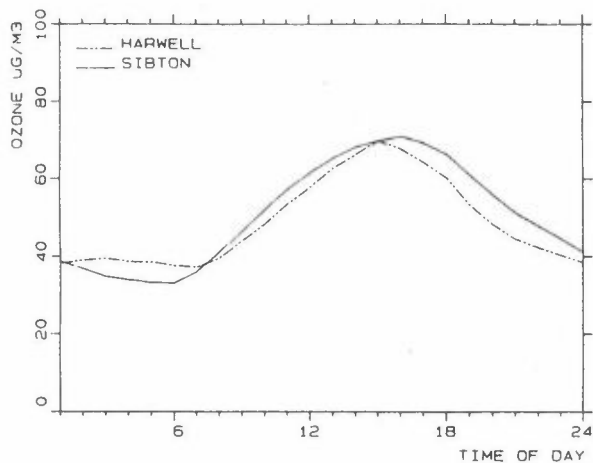
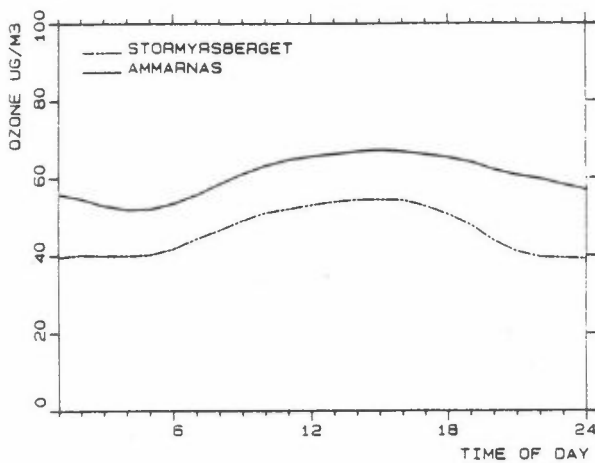
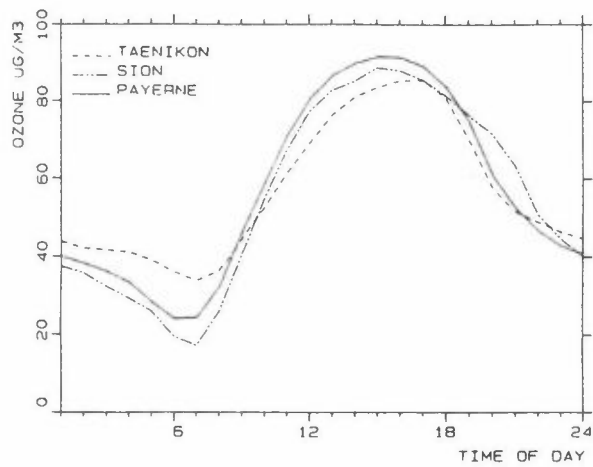
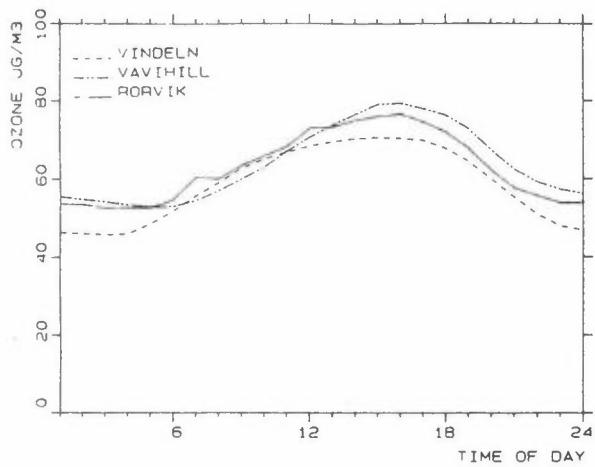


Figure 5 cont.

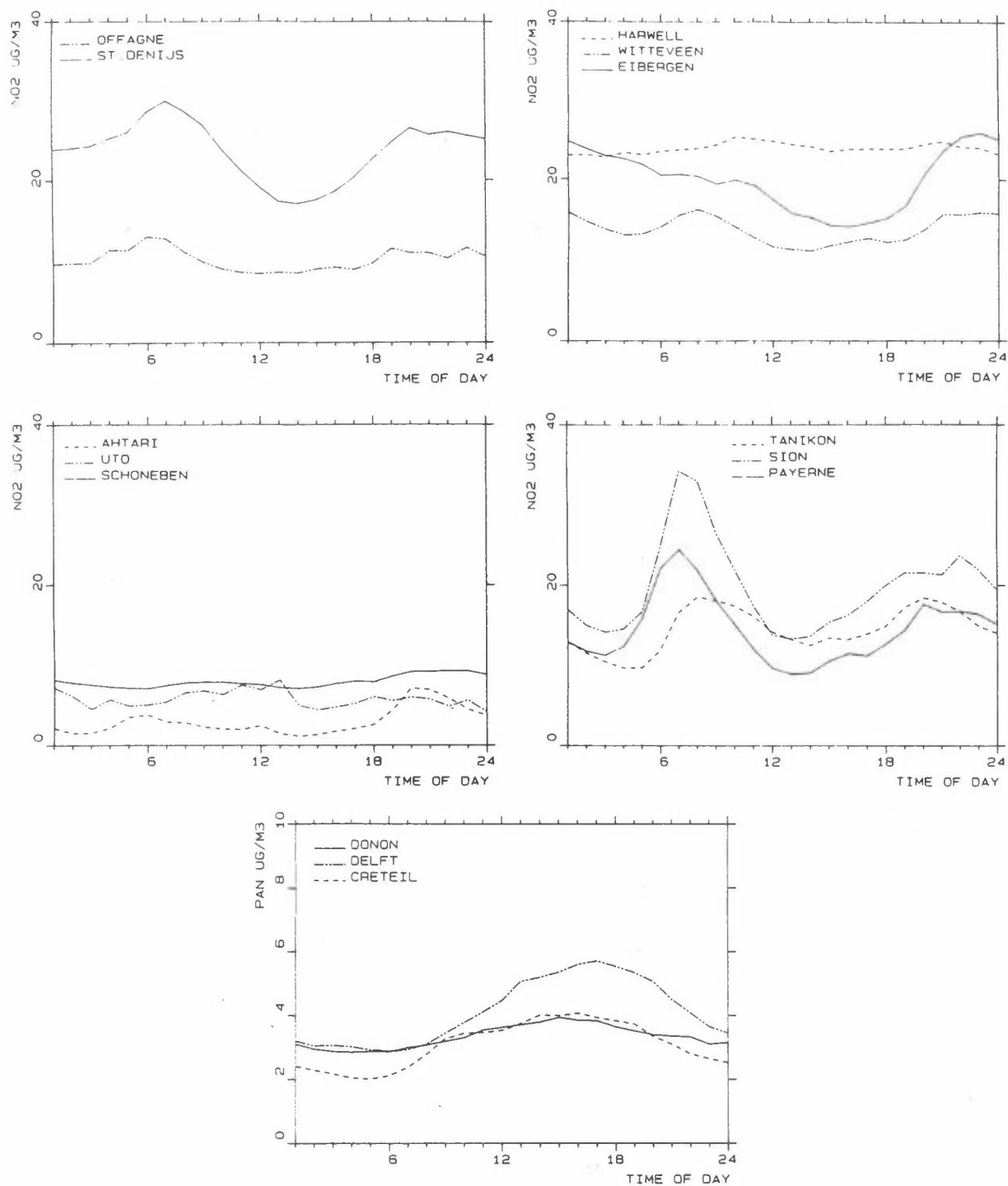


Figure 6: Mean diurnal concentration distributions for nitrogen dioxide and PAN, April-September 1987.

4.5 TRAJECTORY SECTOR DISTRIBUTIONS

The days of the summer half-year period were distributed according to the trajectory sectors. For a certain receptor point, one day is allocated to a 45° sector if the positions of the 96-h back trajectories at the 1000-hPa level arriving on that day are within the sector at least 50% of the time. Only trajectory positions between 150 km and 1500 km from the receptor point are considered. If this criterion is not satisfied for any of the eight 45° sectors, the day is called "undetermined".

The results are given in Appendix F for April-September 1987. "Trajectory roses" are made both for all the days in the half-year period, and for the days on which the maximum 1-h concentration exceeded given limits. The distributions are given as per cent (%) of the number of days meeting the given conditions. For ozone, the concentration limit is $120 \mu\text{g}/\text{m}^3$, $150 \mu\text{g}/\text{m}^3$ and $240 \mu\text{g}/\text{m}^3$ if there were a sufficient number of days.

For NO_2 the concentration limits of $40 \mu\text{g}/\text{m}^3$ and $80 \mu\text{g}/\text{m}^3$ were used. For PAN the concentration limit was $10 \mu\text{g}/\text{m}^3$.

It should be noted, that trajectory sector calculations are associated with many uncertainties, and great caution should be used when trying to indicate emission source areas. This is especially the case for high pressure situations often associated with high oxidant concentrations. Many of these days will have "undertermined" trajectory sectors.

The distributions for two stations are shown in Figure 9. For Schauinsland the half-year distribution of all trajectories show a dominant transport from the southwest-northwest. The distributions with the limits of $120 \mu\text{g}/\text{m}^3$ and $150 \mu\text{g}/\text{m}^3$ were similar to the total distribution, with increased influence of transport from west for the limit of $150 \mu\text{g}/\text{m}^3$.

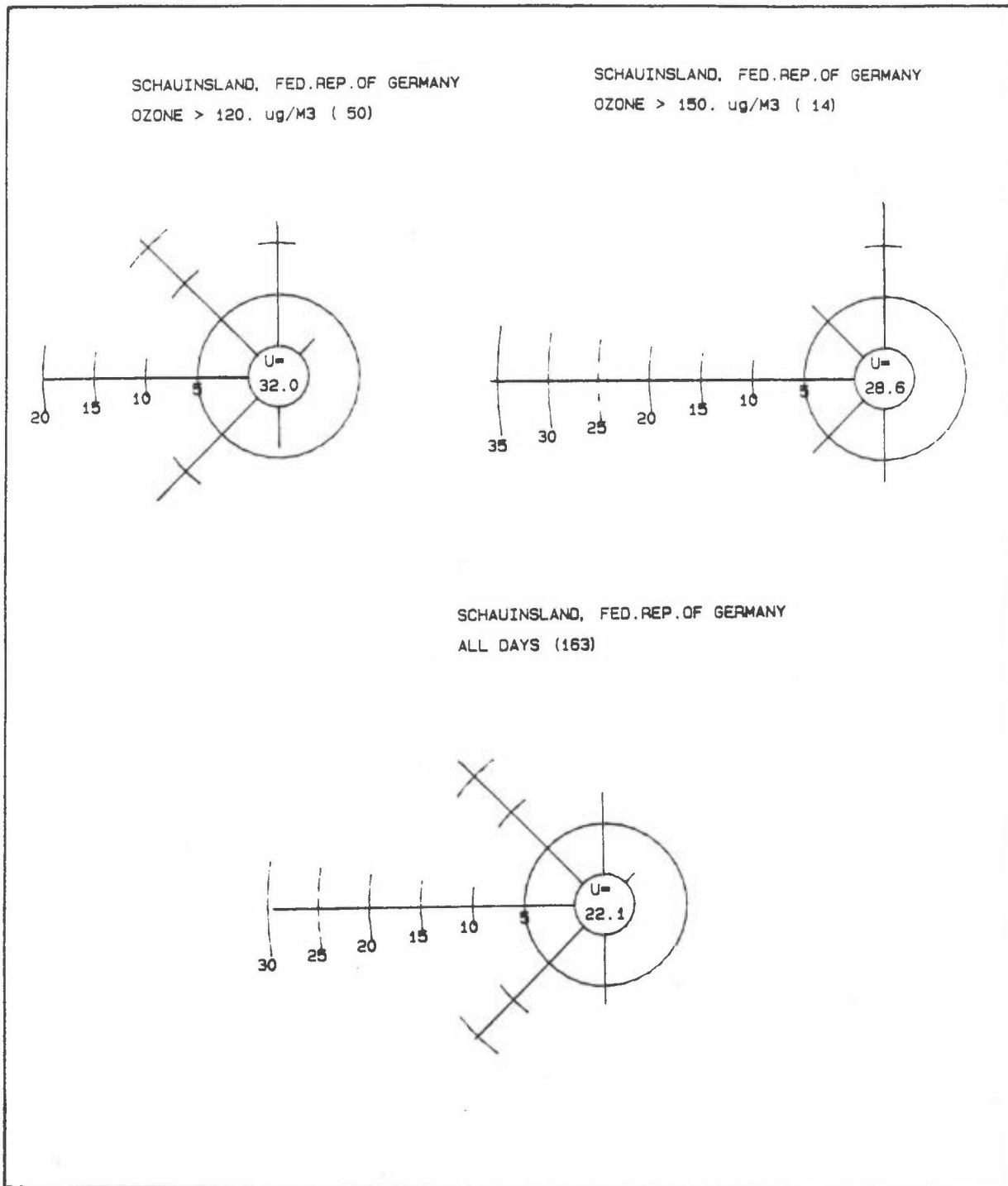


Figure 9: Back trajectory sector distributions (%) for Schauinsland (Federal Republic of Germany) and Payerne (Switzerland), April-September 1987.

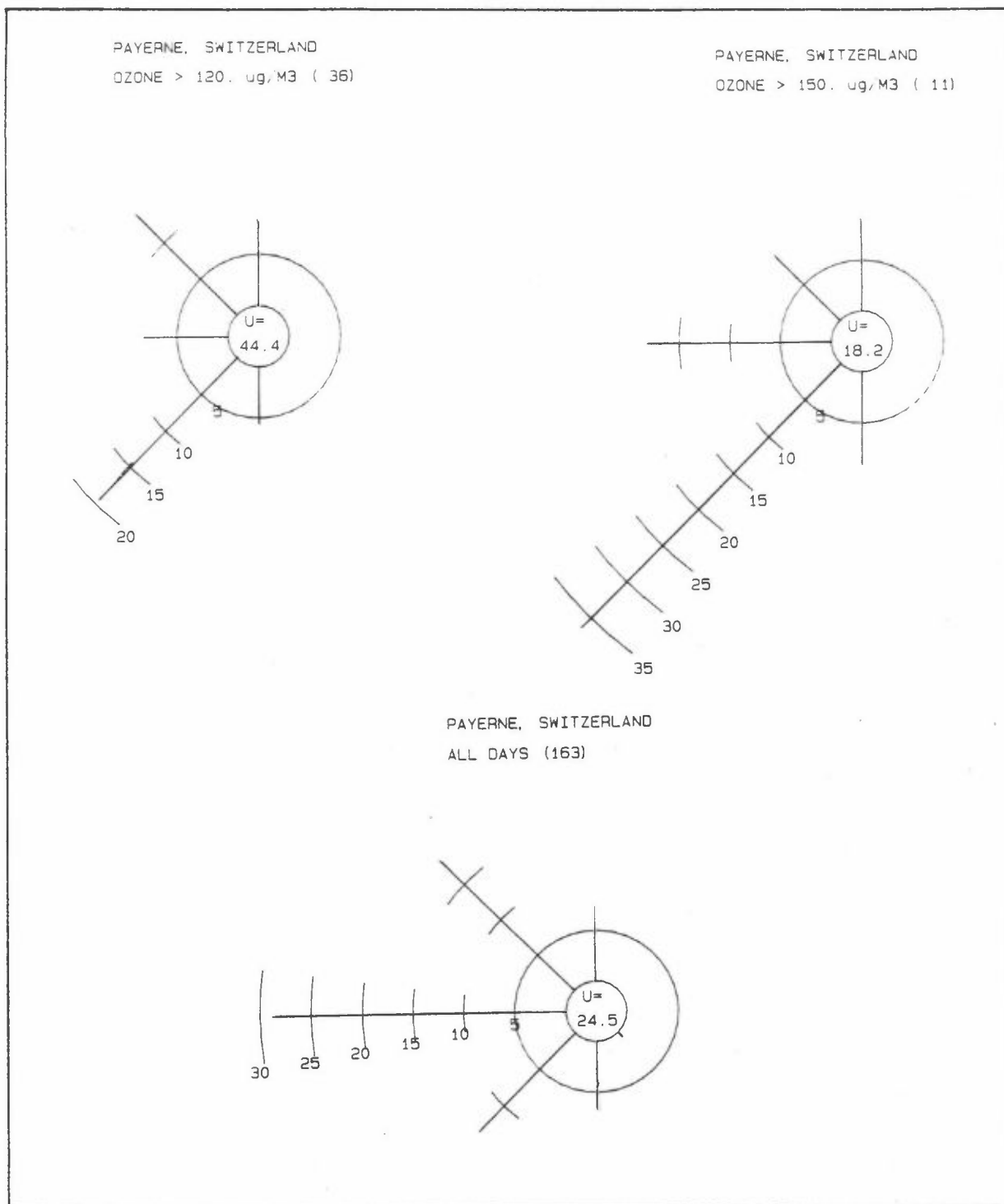


Figure 9 cont.

For Payerne the total distribution was similar to that of Schauinsland, with main directions from the west, northwest and southwest. The days exceeding $120 \mu\text{g}/\text{m}^3$ and $150 \mu\text{g}/\text{m}^3$ had both main directions from the southwest, particularly for the case of $150 \mu\text{g}/\text{m}^3$.

4.6 OZONE EPISODES

In the previous OXIDATE reports, the ozone data from 1985 and 1986 were examined for episodes by using the criterion of an "episode day" as a day when four or more stations recorded a maximum 1-h ozone concentration above $160 \mu\text{g}/\text{m}^3$. In 1985 and 1986, a total of 14 and 20 episode days were found distributed in six and ten episodes, respectively. By using the same criterion for the summer half-year of 1987, 6 episode days were found, distributed in three episodes, 29-30 April, 6-7 July and 21-22 August.

In Table 7 the episode days are presented, back trajectories at the 1000 hPa level are given in Figure 10, and in Figure 11 and Figure 12 weather maps are given (Weather Log, 1987). The maximum hourly ozone concentrations each day are presented in Table 8.

Table 7: Ozone episodes, April-September 1987.

Time period	No. of days	Number of stations with 1-h ozone conc. $\mu\text{g}/\text{m}^3$		Maximum 1-h ozone conc. $\mu\text{g}/\text{m}^3$
		$>160 \mu\text{g}/\text{m}^3$	$>200 \mu\text{g}/\text{m}^3$	
29-30 April	2	8	1	204 Langenbrügge-Waldhof
6-7 July	2	13	4	222 Eibergen
21-22 August	2	8	3	222 Westerland

4.6.1 22-30 April 1987

Although no "episode days" were recorded before 29 April, high concentrations were recorded all the time from 22 to 30 April and the whole period is therefore included in the evaluation of the episode. A high pressure area moved slowly over northern Europe, its centre passing from northern Germany first to the southeast, later to the northwest and north and later again to the east and south. The air masses were first generally coming from the west. Later in the period the directions of the trajectories were variable showing the clockwise circulation around the slowly moving high pressure centre.

Ozone concentrations above $160 \mu\text{g}/\text{m}^3$ were measured in Austria (Schöneben), Federal Republic of Germany (Langenbrügge-Waldhof, Schauinsland and Westerland), Finland (Ahtari), Netherlands (Eibergen), Norway (Birkenes), Sweden (Norra Kivill and Vavihill), Switzerland (Payerne) and United Kingdom (Harwell). The episode thus covered most countries in Europe. The highest concentrations were measured at Langenbrügge-Waldhof ($204 \mu\text{g}/\text{m}^3$).

4.6.2 1-16 July 1987

As for the previous episode elevated ozone concentrations were recorded all the time from 1 July to 16 July and the whole time was included in the evaluation of the episode. A high pressure area over southern England and western France moved slowly to the east, the centre passing over Denmark and North Poland on 5 and 6 July, respectively. A new high pressure area moved over southern England on 8-9 July and then southeast towards France and northern Italy. Towards the end of the period a low pressure area moved from Iceland to the British Isles.

Air trajectories were not available for 1-11 July, but the air trajectories may have been short indicating circulation around the slowly moving high pressure areas. On 12 and 14 July the trajectories came

mainly from the north and west, and on 16 July they were again variable.

Ozone concentrations above $160 \mu\text{g}/\text{m}^3$ were measured in Austria (Schöneben), Belgium (St. Denijs), Denmark (Ulborg), Federal Republic of Germany (Brotjacklriegel, Deuselbach and Schauinsland), Netherlands (Eibergen and Witteveen), Norway (Jeløya), Sweden (Norra Kvill and Vavihill), Switzerland (Payerne) and United Kingdom (Harwell and Sibton). As for the previous episode, this episode covered most of the participating countries, with the highest concentrations measured at Eibergen ($222 \mu\text{g}/\text{m}^3$ on 7 July).

4.6.3 19-24 August 1987

A high pressure area over southern England and France moved towards southern Scandinavia and the western part of the Soviet Union. A low pressure area passed over Great Britain on 22 August and moved east.

The general transport direction of the air masses was from the west, particularly in the first part of the period.

The ozone concentrations were variable, with concentrations exceeding $160 \mu\text{g}/\text{m}^3$ in Denmark (Ulborg), Federal Republic of Germany (Deuselbach, Langenbrügge-Waldhof and Schauinsland), Netherlands (Witteveen) and Switzerland (Payerne and Tänikon). The highest concentrations were measured at Westerland ($222 \mu\text{g}/\text{m}^3$).

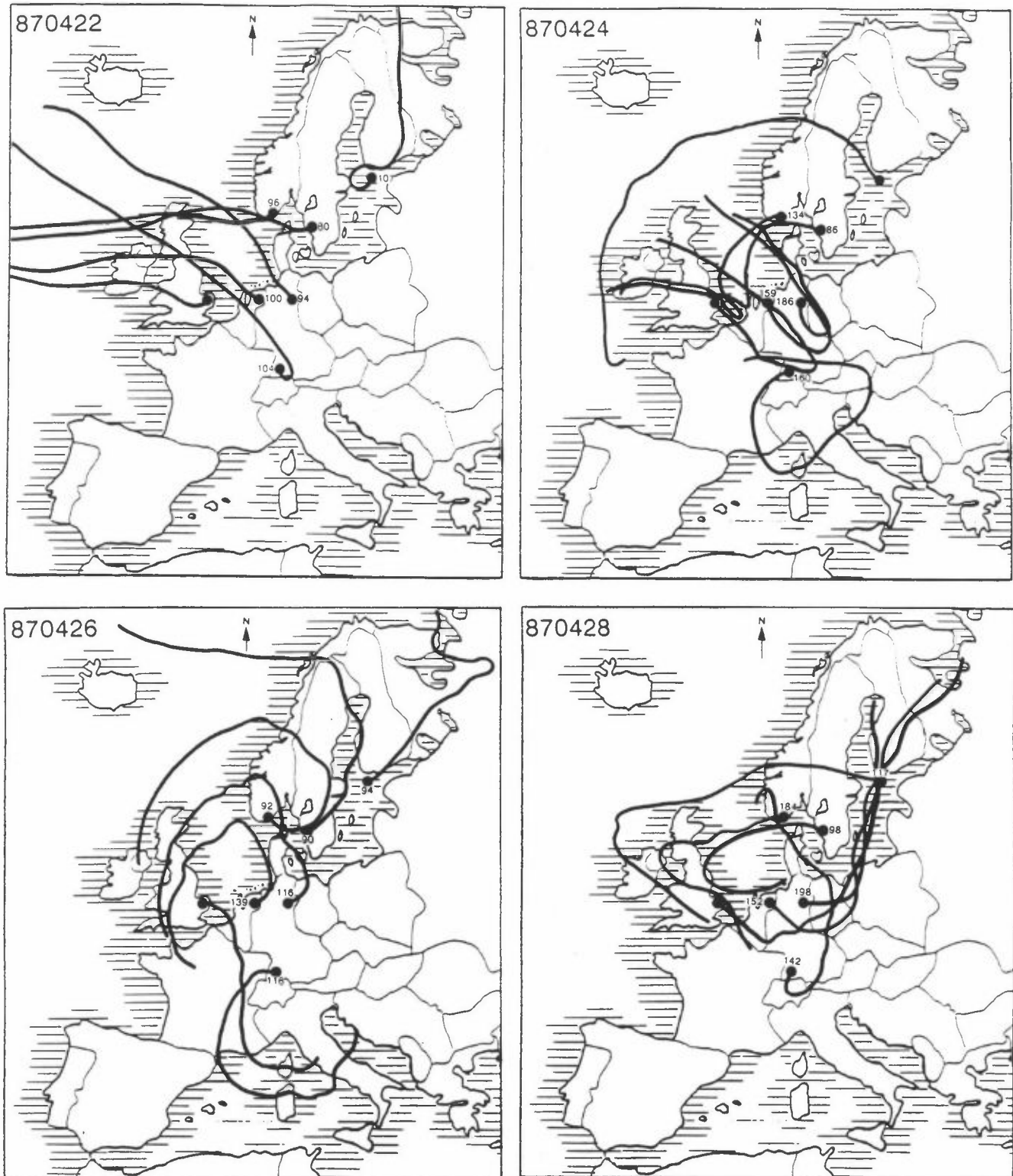


Figure 10: Back trajectories at the 1000 hPa level for 22, 24, 26, 28, 30 April, 2 May, 12, 14, 16 July, and 19, 21, 23 August.

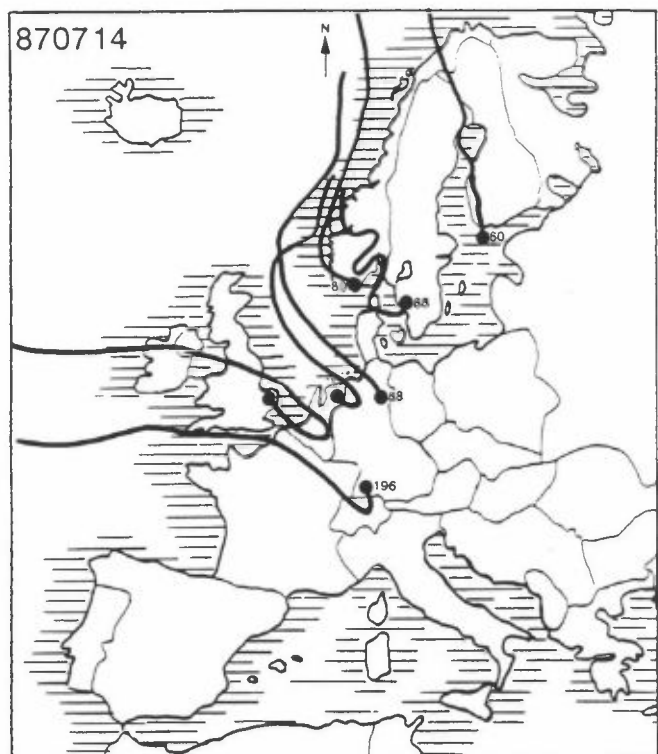
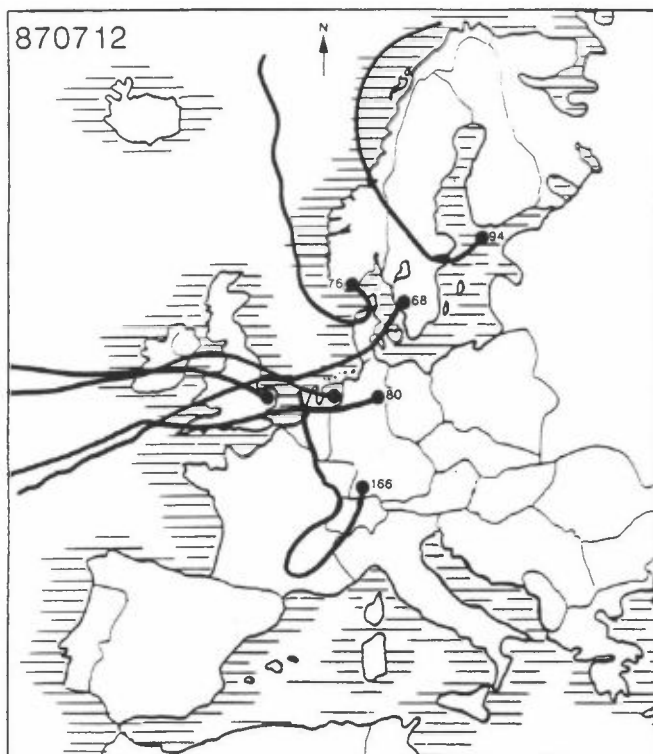
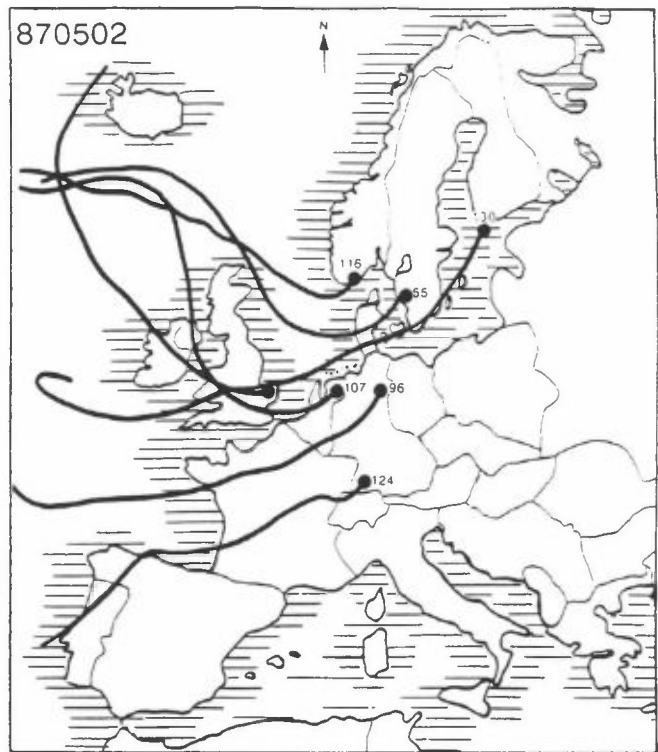
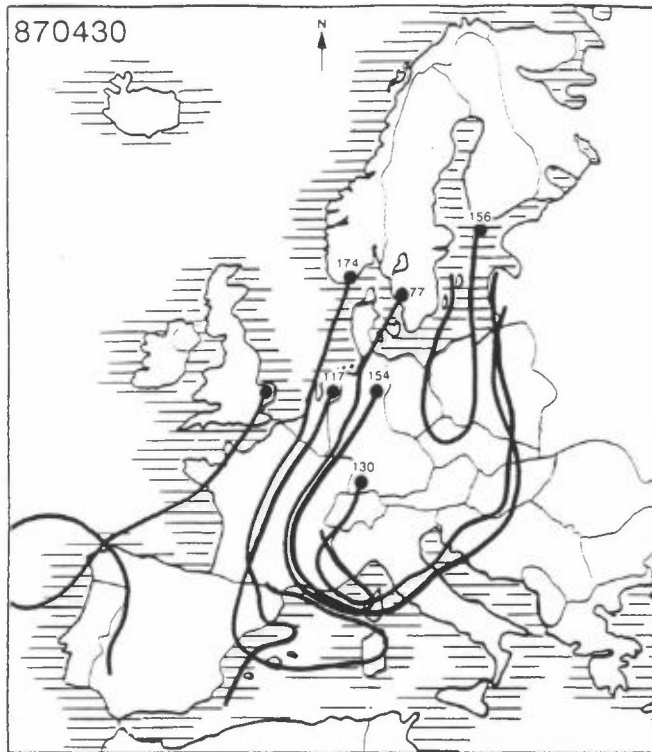


Figure 10 cont.

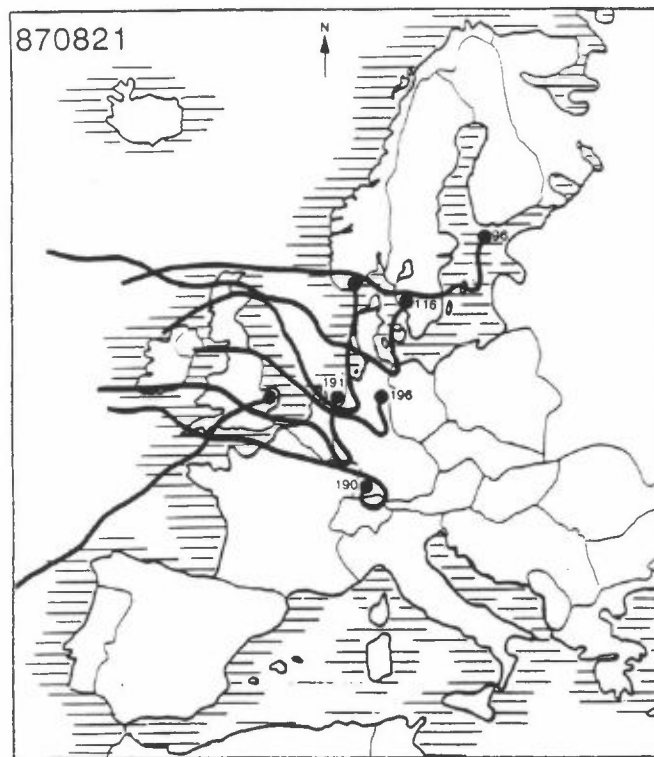
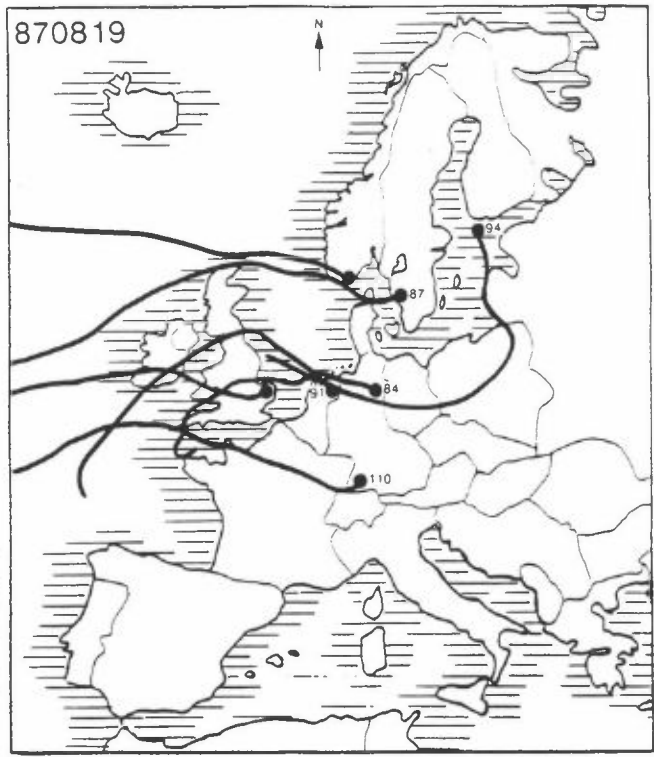


Figure 10 cont.



Figure 11: Weather maps for 22, 24, 26, 28, 30 April, 2 May, and 1, 3, 5, 7, 9, 11, 12, 14, 16 July (Weather Log, 1987).

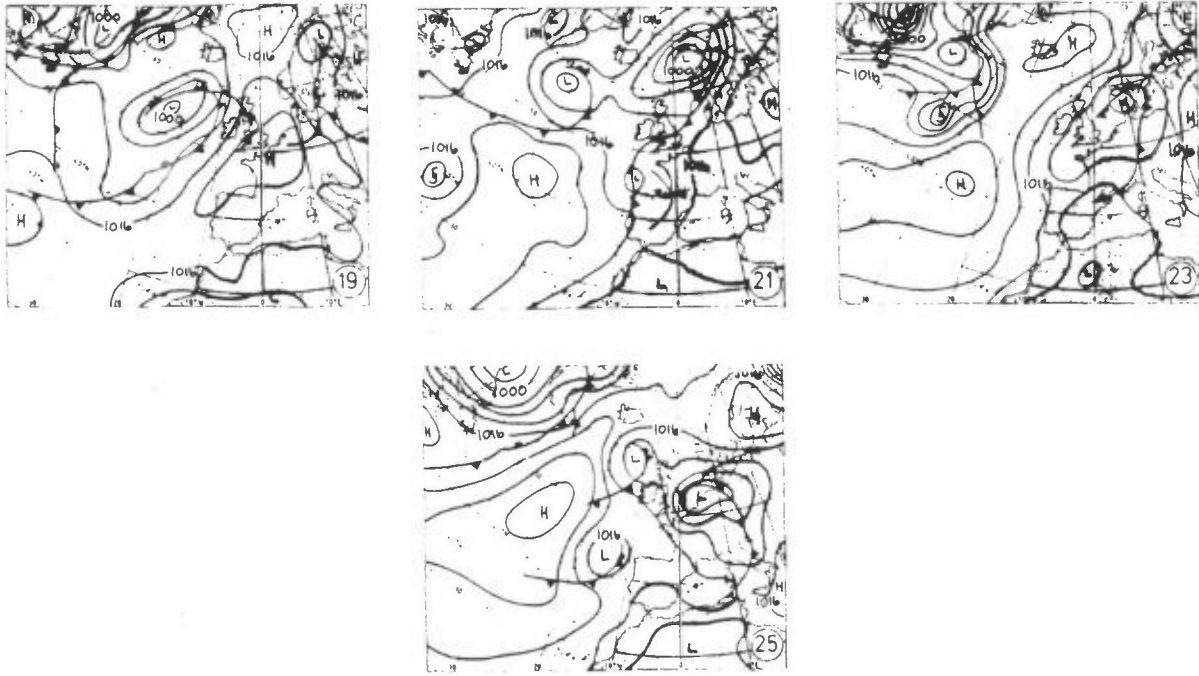


Figure 12: Weather maps for 19, 21, 23 and 25 August (Weather Log, 1987).

Table 8: Maximum hourly ozone concentrations ($\mu\text{g}/\text{m}^3$) during episodes in 1987.
Numbers in parenthesis: less than 12 hourly values.

	April									May		July				
	22	23	24	25	26	27	28	29	30	1	2	1	2	3	4	5
Illmitz																
Schöneben	79	114	123	135	141	111	125	135	158	177	144	146	103	121	125	111
St. Denijs	111	110	136	83	84	111	115	127	80	60	100	77	133	109	172	163
Offagne	95	91	125	80	(70)	100	119	100	77	70	96	52	50	73	63	64
Ulborg	88	98	156	138	108	112	144	(154)	152	104	114	90	82	92	82	98
Brotjacklriegel												188	132	140	150	120
Deuselbach	94	104	146	118	72	98	130	136	118	102	82	132	110	160	140	114
Langenbrügge-Waldhof	94	170	186	172	116	136	198	204	154	112	96					
Schauinsland	104	140	160	136	116	138	142	170	130	136	124	152	166	182	180	134
Westerland	78	90	152	148	126	100	136	164	158	112	116	110	90	84	90	90
Utö	107	86	(90)	87	94	106	117	150	156	169	130	89	86	(76)	89	92
Ahtari	112	100	96	100	108	109	107	128	185	162	149	(57)	60	62	67	70
Eibergen	109	103	134	196	139	105	130	144	124	80	115				130	125
Witteveen	100	110	159	158	139	100	152	159	117	84	107	100	104	112	114	138
Birkenes	96	100	134	118	92	146	184	196	174	100	116	76	72	66	114	110
Jeløya	92	105	88	105	78	57	118	111	131	127	140	100	80	103	115	119
Langesund	87	101	115	120	92	92	124	138	110	81	100	(62)		62	81	(74)
Svanvik	74	88	102	84	80	92	86	84	82	120	80	60	58	56	58	58
Aspvreten	83	74	92	81	94	83	112	132	132	127	84	73	57	51	66	68
Norra Kvill	69	87	96	87	97	88	171	144	164	154	108	95	79	73	76	125
Ringamåla-Sännen	66	91	107	91	83	89	144	137	130	103	48	89	66	80	63	81
Rörvik	80	89	86	100	90	71	98	128	77	79	55	82	75	72	82	112
Vavihill	70	95	135	125	89	91	126	152	182	112	72	96	73	77	73	151
Vindeln	86	88	92	94	97	85	90	100	121	148	91	67	79	76	87	65
Amarnäs	89	91	94	91	91	95	96	104	109	116	94	63	70	68	68	63
Stormyrsberget	67	80	72	70	79	69	81	119	128	100	66	37	46	49	47	54
Payerne	107	135	150	119	109	140	144	166	131	138	156	183	146	133	148	125
Sion	115	133	140	133	113	115	140	152				121	140	131	140	119
Tänikon	96	133	131	155	113	101	121	147	116	132	132	108	101	95	108	100
Harwell	88	136	144	90	104	172	142	108	88	60	96	74	60	92	102	172
Sibton							130	140	88	62	106	82	112	92	88	140

Table 8 cont.

	July											August					
	6	7	8	9	10	11	12	13	14	15	16	19	20	21	22	23	24
Illmitz																	
Schöneben	121	165	150	113	146	129	163	137	131		(130)	95	86	110	112	150	128
St. Denijs	181	207	70	88	129	126	87	112	142	96	49	110	108	147	81	51	75
Offagne	74	(33)														(37)	28
Ulborg	140	170	78	70	70	66	90	74	80	102	94	88	88	182	106	98	84
Brotjackdriegel	138	184	192	150	152	160	162	150	150	166	160	110	114	128	152	154	118
Deuselbach	140	130	118	112	104	152	102	110	176	130	114	88	176	158	206	114	98
Langenbrügge-Waldhof				72	74	120	80	70	88	150	76	84	92	196	206	150	138
Schauinsland	192	158	138	142	170	172	166	176	196	164	114	110	170	190	174	140	100
Westerland	136	168	132	78	70	100	90	76	80	98	118	116	94	190	222	134	104
Utö	120	155	144	(111)	70	72	94	92	60	71	85	94	(86)	96	89	120	69
Ahtari	68	69	69	63	48	(45)	(41)	61	49	(58)	55	68	51	62	66	49	56
Eibergen	168	222	137	95	108	183	104	86	150	108	167	75	87	159	158	94	85
Witteveen	181	219	161	123	185							91	106	191	159	95	94
Birkenes	146	128	80	80	78	72	76	82	80	94	90						
Jeløya	170	154	93	77	83	87	100	96	96	106	90	94	100	129	104	100	49
Langesund				(34)	40	44	47	108	81	95	81	83	81	109	78	78	57
Svanvik	62	48	52	54	50	36	34	56	50	50	48	52	60	58	56	60	48
Aspvreten	142	107	87	68	50	48	69	49	63	52	69	69	63	69	68	88	56
Norra Kvill	184	167	161	76	72	69	73	68	73	74	(50)	52	75	73	78	130	49
Ringamåla-Sannen	103	71	76	47	38	43	33	47	38	50	49	55	58	67	124	107	47
Rörvik	(65)	(96)	90	89	70	71	68	77	88	94	75	87	93	116	110	(122)	
Vavihill	188	149	90	71	70	73	72	76	77	88	72	75	75	87	144	144	64
Vindeln	64	72	57	58	49	65	60	54	63	70	64	55	69	57	61	50	62
Amarnäs	62	57	55	53	51	68	59	50	65	68	67	57	60	37	47	58	59
Stormyrsberget	56	55	38	48	44	49	57	44	44	53	58	44	46	(33)	54	41	50
Payerne	183	135	88	109	140	148	140	158	216	107	113	96	127	168	156	78	54
Sion	135	127	84	125	150	150	148	123	138	100	94						
Tänikon	148	(106)										98	104	141	180	73	67
Harwell	132	84	62	46	176	18	14	82	110	66	80	70	118	90	86	54	46
Sibton	200	146	74	84	56	108	80	106	96	114	64	106	146	112	98	80	76

5 CONCLUSION

Hourly data on photochemical oxidants from October 1986 to December 1987 are presented from 36 regional stations in Europe. These 11 countries are represented: Austria, Belgium, Denmark, Federal Republic of Germany, Finland, France, Netherlands, Norway, Sweden, Switzerland and United Kingdom.

33 stations have reported ozone, 12 have reported nitrogen dioxide and three stations have reported PAN.

The individual countries have selected the monitoring stations, and they have also been responsible for the quality assurance of the data. No centralised intercalibration or other data quality control has been carried out.

During the summer half-year (April-September 1987), the highest ozone concentrations were $335 \mu\text{g}/\text{m}^3$ (hourly mean) and $209 \mu\text{g}/\text{m}^3$ (daily mean), both measured at Illmitz, Austria. The highest concentrations of nitrogen dioxide were $258 \mu\text{g}/\text{m}^3$, hourly mean (Payerne, Switzerland), and $65 \mu\text{g}/\text{m}^3$, daily mean (Harwell, United Kingdom). The highest concentrations of PAN were $33 \mu\text{g}/\text{m}^3$, hourly mean, and $13 \mu\text{g}/\text{m}^3$, daily mean both monitored at Delft, Netherlands. A complete set of data have been submitted on magnetic tape to all the participating countries.

The magnitude and extension of the episodes with high ozone concentrations are not clear from the data.

The highest ozone concentrations in 1987 were recorded in the southern part of the Federal Republic of Germany. The concentrations in Scandinavia, United Kingdom and the western part of continental Europe were generally lower than in central continental Europe. The gradient through Europe with increasing concentrations from northwest to southeast were generally similar to that of 1985 and 1986, even if the gradient was weaker and also more difficult to determine for 1987.

The air trajectory sector distributions showed that certain trajectory directions in many cases were strongly associated with high ozone concentrations. These directions varied considerably between different regions in Europe and were generally not the same as the main directions for the whole half-year period.

The examination of the data reveals in many cases large variations of concentration levels and patterns between the stations. Further work is needed in order to explain these variations. Local and mesoscale concentration variations of oxidant concentrations are well known and must be taken into account when data from different stations are compared.

There is a definite need to include more countries and measurement stations, in order to improve the understanding of the oxidant phenomenon. Data from East Europe and the Mediterranean area are of great interest in future joint European measurement programmes.

6 ACKNOWLEDGEMENT

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APPENDIX A

Summary of ozone data,

- 1) October 1986 - March 1987 page 45
- 2) April - September 1987 " 65
- 3) October - December 1987 " 111

The tables give the number of hours per day, and the number of days, with hourly concentrations exceeding given limits.

Site : ILLMITZ, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 13 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	Maximum 1-h concentration
131086	5	2					138.
141086	13	8	5	5			196.
151086	15	10	6	5			183.
161086	19	9	8	8			200.
171086	9	7	7	5	5		234.
181086	15	13	9	8	4	2	243.
191086	18	17	8	7			197.
201086	4						113.
211086	18	15					138.
231086	13	7					131.
241086	11	2					126.
251086	10	6					138.
011186	1						107.
031186	2						104.
041186	1						119.
101186	5	4					129.
111186	2						108.
141186	4						115.
241186	2						112.
161286	6	3					142.
171286	11	6					144.
191286	15	14					149.
201286	24	10					150.
211286	17	8					134.
221286	9	1					121.
231286	9						109.
271286	8	6					126.
281286	18	9					146.
291286	24	20	12	3			166.
301286	24	24	7	2			162.
311286	10	9	2	1			162.
010187	18	17	8				158.
020187	12	8					144.
030187	5						115.
040187	3						113.
050187	2						113.
060187	18	11					138.
070187	4	1					123.
080187	4						109.
090187	9	4					124.
260187	6	2					130.
270187	16	2					126.
280187	14	4					138.
290187	8	1					121.
310187	14	10	8	7			188.

Site : ILLMITZ, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 13 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	Maximum 1-h concentration
010287	13	8	3	2			186.
020287	15	8	1	1			161.
030287	23	16	1				156.
040287	12	6					144.
050287	2						109.
100287	4						106.
110287	4						117.
120287	16	8	3	1			161.
130287	2						110.
210287	8	7	4	3			172.
220287	3	2					138.
230287	4	3					144.
260287	5						114.
270287	10						109.
280287	1						102.
030387	2	2					140.
040387	9	5					144.
050387	4						109.
060387	5	2					141.
070387	11	10	8	7			173.
080387	4						106.
090387	2						103.
110387	4						118.
120387	2						111.
130387	4						111.
140387	5	3					130.
150387	16	5					136.
160387	18	16	8	5	3		222.
170387	23	19	3				159.
180387	13	11	5	5	1		209.
190387	8	1					127.
200387	19	6					144.
210387	21	18	11	9	4	1	257.
220387	24	23	14	11	3		212.
230387	20	12	6	3			194.
240387	16	9	6	4			184.
250387	16	9	6	5			197.
260387	18	13	4				158.
270387	9	6	4				156.
280387	21	15	6	5			183.
290387	24	24	18	16			189.
300387	24	22	14	11			176.
310387	24	18	3	3			166.
Total number of hours	963	577	208	142	20	3	
Total number of days	88	63	31	26	6	2	

Site : SCHOENEHEN, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	Maximum 1-h concentration
021086	10	6	2	153.
031086	13	7		149.
041086	5			112.
111086	3			109.
141086	2			115.
151086	1			101.
161086	1			105.
171086	7			117.
181086	6			118.
020287	2			103.
030287	4			110.
060287	7	1		126.
260287	3			112.
040387	1			102.
080387	7			106.
090387	4			103.
100387	3			106.
110387	14	7		125.
120387	14	1		121.
130387	11	1		120.
140387	14	9		134.
150387	21	13	2	153.
190387	4			105.
210387	10			115.
220387	12			110.
230387	4			108.
250387	6			120.
270387	3			105.
280387	1			103.
Total number of hours	193	45	4	
Total number of days	29	8	2	

Site : GENT ST. KRUISWINKEL, BELGIUM
Parameter: OZONE, UG/M3
Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : ST. DENIJS, BELGIUM
Parameter: OZONE, UG/M3
Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	>100	Maximum 1-h concentration
101086	1	102.

Total
number of hours 1

Total
number of days 1

Site : OFFAGNE, BELGIUM
Parameter: OZONE, UG/M3
Period : 8 OCTOBER 1986 - 28 MARCH 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : ULBORG, DENMARK
 Parameter: OZONE, UG/M3
 Period : 18 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
100387	1		102.
110387	1		106.
130387	3		118.
140387	4	2	122.
270387	2		102.
280387	2		102.
290387	7		106.
Total			
number of hours	20	2	
Total			
number of days	7	1	

Site : BROTHACKLRIEGEL, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 10 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration		
	>100	>120	
021086	11	7	146.
031086	24	14	146.
041086	5		114.
051086	3		108.
061086	6	5	130.
111086	7		114.
121086	6		108.
131086	12		112.
141086	9		110.
151086	14		112.
161086	8		110.
171086	16		114.
181086	20	2	124.
250287	2		104.
260287	2		110.
080387	6		106.
090387	5		108.
Total number of hours	156	28	
Total number of days	17	4	

Site : DEUSELBACH, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

No hourly values exceeding 100

Site : WALDHOF, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
011086	5	2	2	1	164.
141086	7	6	2	1	164.
151086	2				116.
020287	4	2			128.
030287	5				120.
200287	3				106.
210287	4				118.
220287	5				110.
230287	4				106.
240287	1				108.
250287	11	6	4	2	172.
260287	7	2			128.
010387	1				102.
060387	7				112.
070387	5				106.
090387	16	11			146.
100387	17	13			144.
110387	18	13	6		158.
120387	23	14	2		154.
130387	12	8			138.
140387	23	12	1		156.
150387	1				106.
160387	4				110.
210387	4				108.
260387	3				104.
280387	1				102.
290387	5				102.
300387	1				104.
310387	2				102.
Total number of hours	201	89	17	4	
Total number of days	29	11	6	3	

Site : SCHAUINSLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration		
	>100	>120	
011086	16	2	126.
021086	12	5	136.
031086	18	1	122.
041086	19	5	146.
051086	20	3	126.
061086	16	7	128.
101086	10	3	122.
111086	14	3	124.
121086	10		114.
131086	16		116.
141086	13		118.
151086	9		114.
161086	18	6	128.
171086	23	2	122.
181086	18	7	146.
111186	3		102.
240287	2		104.
250287	1		104.
090387	1		102.
120387	2		104.
130387	14		118.
140387	2		110.
150387	11	2	122.
Total number of hours	268	46	
Total number of days	23	12	

Site : WESTERLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
130387	1	104.
140387	3	114.

Total
 number 4
 of hours

Total
 number 2
 of days

Site : UTOE, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	Maximum 1-h concentration
080387	6	2		122.
090387	1			108.
110387	6			111.
140387	2			116.
150387	21	5		125.
160387	23	22	1	152.
170387	23	22		148.
180387	23	22		142.
190387	23	23		146.
200387	7	4		128.
230387	12			119.
250387	10			119.
260387	21	9		142.
270387	3	2		136.

Total
 number 181 111 1
 of hours

Total
 number 14 9 1
 of days

Site : AHTARI, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
100387	6		113.
140387	3		103.
150387	2		113.
160387	8		116.
170387	20	13	149.
180387	23	23	141.
190387	20	2	124.
200387	11	1	121.
210387	11		114.
230387	11		111.
240387	8		105.
250387	10		111.
260387	12	7	128.
270387	13	9	126.
310387	4		103.

Total
 number of hours 162 55

Total
 number of days 15 6

Site : EIBERGEN, NETHERLANDS
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
140387	1	101.

Total
 number of hours 1

Total
 number of days 1

Site : WITTEVEEN, NETHERLANDS
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 23 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
100387	1	101.
120387	4	105.
140387	2	104.

Total
 number 7
 of hours

Total
 number 3
 of days

Site : BIRKENES, NORWAY
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
220287	1		102.
090387	4		104.
100387	8		106.
110387	3		104.
130387	6		106.
140387	12	4	128.
150387	7		118.
170387	5		106.
250387	5		106.
270387	1		102.
290387	13		108.

Total
 number 65 4
 of hours

Total
 number 11 1
 of days

Site : SVANVIK, NORWAY
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
170387	11		116.
180387	24	6	126.
190387	16	1	122.

Total
 number of hours 51 7

Total
 number of days 3 2

Site : ASPVRETEN, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 10 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
250387	3	104.
260387	4	102.

Total
 number of hours 7

Total
 number of days 2

Site : NORRA KVILL, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
100387	5		104.
110387	21	2	126.
120387	24		120.
130387	14	1	122.
140387	9		108.
150387	13		120.
160387	24		116.
170387	10		106.
250387	14	4	122.
260387	6		110.
310387	6		104.

Total
 number 146 7
 of hours

Total
 number 11 3
 of days

Site : SENNEN, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

No hourly values exceeding 100

Site : RØRVIK, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
121186	19	112.
131186	10	105.
141186	1	102.
161186	2	105.
130387	2	117.
150387	7	107.
160387	9	106.
170387	2	104.
240387	1	104.

Total
 number 53
 of hours

Total
 number 9
 of days

Site : VAVIHILL, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
090387	4	104.
100387	7	108.
110387	16	115.
120387	11	111.
130387	24	118.
140387	14	113.
150387	20	120.
170387	4	110.

Total
 number 100
 of hours

Total
 number 8
 of days

Site : VINDELN, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	>100	>120
160387	5	
170387	16	
180387	15	1
190387	21	
260387	7	
270387	11	

Total
 number of hours 75 1

Total
 number of days 6 1

Site : AMMARNAES, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	>100	
260387	4	109.
270387	21	110.

Total
 number of hours 25

Total
 number of days 2

Site : STORMYRSBERGET, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	>100	Maximum 1-h concentration
290187	1	102.

Total
number
of hours

1

Total
number
of days

1

Site : PAYERNE, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	>280	>320	Maximum 1-h concentration
011086	8	8	6	6	3				213.
021086	10	7	5	5	2				212.
031086	10	7	7	7	2				212.
041086	10	10	8	8	7	1			244.
051086	11	10	9	9	7	5	4	2	330.
061086	11	9	7	7	6	4	1		292.
071086	10	10	9	9	3				212.
081086	10	7	1						156.
091086	6	2							121.
101086	8	7	5	4					189.
111086	12	8	5	5	3				234.
121086	11	8	4						158.
131086	9	8	5	3					185.
141086	12	10	10	9	6	4			273.
151086	10	9	8	7	6				240.
161086	10	8	6	6	4	2			253.
171086	6	1							127.
181086	8	6	3	1					164.
191086	10	4	1						158.
201086	10	6	2	1					162.
221086	21	6	5	5					191.
231086	6	2	1	1					197.
161186	4	1							121.
171186	10	5	2	2					197.
191186	1								105.
130287	1								117.
130387	1								103.
140387	8								119.
150387	5	4							138.
250387	1								103.
280387	1								103.
Total number of hours	251	163	109	95	49	16	5	2	
Total number of days	31	25	21	18	11	5	2	1	

Site : SION, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 1 - 16 OCTOBER 1986

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
031086	3	111.
041086	2	107.
051086	2	107.
061086	1	107.
071086	1	103.
081086	2	105.
111086	1	101.

Total
 number of hours 12

Total
 number of days 7

Site : TAENIKON, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1986

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
021086	1	101.
031086	4	116.
041086	1	106.
051086	1	108.
071086	1	106.
151086	2	109.

Total
 number of hours 10

Total
 number of days 6

Site : HARWELL, UNITED KINGDOM
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
031086	1				102.
161286	1	1	1		160.
180387	1	1	1	1	192.
Total number of hours	3	2	2	1	
Total number of days	3	2	2	1	

Site : ILLMITZ, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 25 AUGUST - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	>280	>320	Maximum 1-h concentration
250887	24	19	16	15	14	10	4		320.
260887	20	17	12	10	7	1			246.
270887	16	16	15	14	11	7			279.
280887	24	24	24	24	15				239.
290887	23	21	14	14	3				222.
300887	13	9	8	8	5				229.
310887	16	16	16	15	13	7	4	1	335.
010987	18	15	8	6	5	3			251.
020987	19	16	13	11	8	6	4		307.
030987	13	10	10	10	8	6	4	1	323.
040987	11	9	9	8	7				240.
050987	13	11	11	11	9	7	1		282.
060987	21	20	11	11	2				208.
070987	24	18	8	8	6				223.
080987	6	2	1	1					162.
090987	11	10	6	5	1				203.
100987	13	8	8	8	5				235.
110987	10	7	6	5	2				229.
120987	10	9	5	1					165.
210987	8	5	1	1					174.
280987	15	9	8	7	1				207.
290987	11	9	6	5					180.
300987	8	7							140.
Total number of hours	347	287	216	198	122	47	17	2	
Total number of days	23	23	22	22	18	8	5	2	

Site : SCHOENEUBEN, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
030487	2				104.
050487	7				110.
070487	14	5			125.
080487	6				116.
090487	5				108.
110487	1				101.
120487	7				108.
140487	10				117.
150487	7				113.
170487	7				118.
180487	19	10			144.
190487	19	8	4	2	167.
230487	6				114.
240487	15	5			123.
250487	23	12			135.
260487	7	5			141.
270487	9				111.
280487	8	4			125.
290487	22	10			135.
300487	23	9	3		158.
010587	22	14	6	4	177.
020587	19	11			144.
030587	8				109.
050587	4				105.
060587	2				104.
080587	12				115.
090587	15	6			137.
100587	21	13	1		150.
110587	12				116.
120587	9	5			126.
130587	1				100.
140587	4				107.
150587	9				119.
170587	9				120.
180587	13				119.
190587	15	1			121.
200587	8				112.
240587	2				108.
250587	13				120.
260587	8	4			126.
270587	14	7			147.
280587	3				110.
290587	11	6			131.
300587	1				100.
020687	8	3			124.
030687	2				105.
060687	6				108.

Site : SCHOENEENBEN, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
100687	5				112.
110687	9	4			141.
120687	16	4			135.
130687	19	7			138.
140687	9				106.
170687	9				111.
180687	1				101.
190687	8				116.
250687	5				115.
260687	1				102.
280687	10				115.
290687	2				102.
300687	15	11	4	2	168.
010787	19	11			146.
020787	2				103.
030787	12	3			121.
040787	14	5			125.
050787	5				111.
060787	11	1			121.
070787	15	10	2	2	165.
080787	22	12			150.
090787	11				113.
100787	15	12			146.
110787	18	6			129.
120787	20	12	5	1	163.
130787	11	5			137.
140787	7	4			131.
160787	9	6			130.
170787	13	8			134.
180787	5				111.
210787	1				111.
220787	4				107.
230787	8				110.
240787	6				118.
250787	7	1			121.
080887	7	1			123.
110887	4				108.
120887	1				111.
130887	4	1			121.
140887	7	6			144.
150887	4				114.
170887	7				116.
180887	1				101.
210887	4				110.
220887	7				112.
230887	8	6	1		150.
240887	11	2			128.
250887	5				109.

Site : SCHOENEHEN, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
260887	1				101.
270887	6				116.
310887	7	1			121.
010987	4				110.
020987	3				103.
030987	5				113.
040987	10	6			148.
050987	5				115.
100987	1				101.
130987	5				119.
140987	7				117.
170987	8	3			134.
180987	5	2			127.
190987	2				118.
200987	2				102.
210987	2				102.
220987	3	2			129.
230987	5				117.
Total					
number	963	290	26	11	
of hours					
Total					
number	113	47	8	5	
of days					

Site : ST. DENIJS, BELGIUM
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 26 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
160487	3					105.
170487	6	5				135.
180487	4	3				133.
220487	3					111.
230487	3					110.
240487	7	5				136.
270487	3					111.
280487	4					115.
290487	4	2				127.
080587	3	2				140.
090587	8	6				145.
110687	1					101.
120687	3	1				123.
290687	2					104.
020787	5	1				133.
030787	4					109.
040787	7	5	2	1		172.
050787	8	7	3	2		163.
060787	10	8	7	5		181.
070787	13	12	12	10	1	207.
100787	6	3				129.
110787	10	3				126.
130787	1					112.
140787	7	4				142.
230787	6					109.
070887	2					109.
110887	4					109.
130887	6	3				127.
160887	4					111.
190887	3					110.
200887	2					108.
210887	8	6				147.
010987	5	3	2	2		163.
Total number of hours	165	79	26	20	1	
Total number of days	33	18	5	5	1	

Site : OFFAGNE, BELGIUM
 Parameter: OZONE, UG/M3
 Period : 7 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
160487	5				115.
180487	11	10	2		155.
240487	5	3			125.
280487	5				119.
090587	3				109.
100587	2				108.
240587	4				103.
250587	3				103.
260587	6	3			131.
290987	3	2	2	1	171.
Total number of hours	47	18	4	1	
Total number of days	10	4	2	1	

Site : ULBORG, DENMARK
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
030487	3				112.
040487	4				108.
060487	9	4			132.
170487	2				102.
180487	2				102.
190487	4				112.
240487	10	9	1		156.
250487	12	8			138.
260487	2				108.
270487	7				112.
280487	9	6			144.
290487	8	5	1		154.
300487	5	3	1		152.
010587	1				104.
020587	11				114.
030587	12	1			122.
040587	3				104.
050587	10				116.
060587	13				112.
220587	1				112.
230587	11	1			122.
240587	5				114.
260587	4				104.
290587	2				106.
300587	7				106.
020687	3				104.
030687	4				102.
050687	1				102.
130687	2				114.
140687	3				104.
150687	6				108.
300687	2	2			132.
060787	9	4			140.
070787	10	9	3	2	170.
150787	2				102.
230787	1				102.
130887	5				116.
150887	3				106.
210887	12	11	7	6	182.
220887	1				106.
Total number of hours	221	63	13	8	
Total number of days	40	12	5	2	

Site : BROTJACKLRIEGEL, FRG
 Parameter: OZONE, UG/M3
 Period : 12 MAI - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
120587	9	5			130.
130587	4				102.
140587	13				118.
150587	24	8			124.
160587	5	3			132.
170587	15	11			130.
180587	24	7			128.
190587	24	14			136.
200587	17	4			128.
240587	14	6			128.
250587	23	16			136.
260587	23	19	4	1	162.
270587	21	16			142.
280587	8	3			126.
290587	17	9			142.
300587	11				118.
310587	10				118.
020687	13	7			132.
030687	17				114.
040687	5				108.
050687	4				110.
060687	13	5			124.
070687	9				116.
080687	7				114.
090687	6				108.
100687	16	8			132.
110687	24	15			144.
120687	23	23	2		156.
130687	24	20	1		156.
140687	19	2			126.
150687	13				112.
160687	9				116.
170687	14	3			128.
180687	7				114.
190687	13	5			126.
200687	10				112.
220687	11	7			132.
230687	3	1			124.
250687	12	8			136.
260687	14	3			132.
270687	10				116.
280687	16	12			140.
290687	24	2			124.
300687	24	15	1		152.
010787	24	23	8	6	188.
020787	14	3			132.
030787	21	10			140.

Site : BROTJACKLRIEGEL, FRG
 Parameter: OZONE, UG/M3
 Period : 12 MAI - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
040787	24	15			150.
050787	24				120.
060787	19	3			138.
070787	24	15	10	9	184.
080787	22	18	4	3	192.
090787	23	12			150.
100787	24	16	1		152.
110787	24	24	1		160.
120787	24	24	11	1	162.
130787	24	20			150.
140787	24	22			150.
150787	24	24	7	3	166.
160787	23	23	8		160.
170787	23	15	2		156.
180787	5				110.
190787	2				106.
200787	8				110.
210787	7				120.
220787	19	4			128.
230787	20	14			142.
240787	21	15			142.
250787	12	3			126.
270787	2				104.
300787	2				106.
070887	2				104.
080887	20	11			140.
090887	15	4			130.
100887	5				108.
110887	12	2			124.
120887	20	1			122.
130887	23	12			136.
140887	22	10	1		152.
150887	11	1			124.
160887	9				114.
170887	23	12			138.
180887	7	4			132.
190887	7				110.
200887	14				114.
210887	24	2			128.
220887	24	14	1		152.
230887	23	16	1		154.
240887	22				118.
250887	4				110.
260887	10				114.
270887	7				120.
300887	6				110.
310887	20				116.
010987	18	4			130.

Site : BROTHACKLRIEGEL, FRG
 Parameter: OZONE, UG/M3
 Period : 12 MAI - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
020987	14				116.
030987	10				114.
040987	22				120.
050987	13				116.
130987	9				114.
140987	8				114.
200987	19				120.
210987	9	2			124.
220987	11				114.
230987	2				104.
Total number of hours	1570	655	63	23	
Total number of days	105	63	16	6	

Site : DEUSELBACH, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
070487	1					102.
140487	4					110.
170487	3					106.
180487	15	4				130.
190487	5					112.
230487	2					104.
240487	15	7				146.
250487	13					118.
280487	8	3				130.
290487	13	5				136.
300487	7					118.
010587	1					102.
080587	1					102.
090587	7	1				124.
100587	9					120.
170587	3					110.
240587	7					108.
250587	9					108.
260587	15	12				146.
270587	3	2				136.
280587	5					110.
300587	7					110.
120687	3					116.
190687	2					110.
290687	4					114.
300687	9	4				134.
010787	4	1				132.
020787	6					110.
030787	7	4	2			160.
040787	13	7				140.
050787	8					114.
060787	13	8				140.
070787	12	3				130.
080787	3					118.
090787	5					112.
100787	2					104.
110787	13	7	1			152.
120787	1					102.
130787	5					110.
140787	13	11	6	4		176.
150787	4	3				130.
160787	7					114.
240787	4					114.
120887	7	2				130.
200887	14	14	7	6		176.

Site : DEUSELBACH, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
210887	22	17	4			158.
220887	24	24	12	7	2	206.
230887	1					114.
250887	4					104.
290887	1					102.
300887	7	3				124.
310887	7	5				148.
010987	10	7	4	3		190.
020987	8	6	2			156.
030987	14	12	9	1		164.
040987	8	5				130.
080987	3					106.
090987	9	1				124.
100987	1					104.
170987	10	8	5	2		190.
180987	6	5				150.
190987	1					114.
200987	6					114.
210987	17	14	8	4		180.
220987	10	1				130.
260987	1					116.
Total number of hours	482	206	60	27	2	
Total number of days	66	31	11	7	1	

Site : WALDHOF, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
010487	9	2				124.
030487	3					118.
070487	9	6				140.
080487	6					118.
110487	3					110.
120487	2					106.
140487	1					102.
160487	5					118.
170487	10					120.
180487	12	4				128.
190487	8	7	1			156.
230487	11	8	3	2		170.
240487	13	11	9	8		186.
250487	13	12	9	9		172.
260487	9					116.
270487	12	7				136.
280487	16	14	8	8		198.
290487	18	15	13	11	1	204.
300487	13	7	2			154.
010587	3					112.
030587	16	13				136.
040587	8					116.
050587	8	6				138.
060587	13					114.
070587	9	6				136.
080587	8	1				122.
090587	11	11	9	7		174.
100587	10	6	4	3		188.
130587	4					104.
140587	3					114.
150587	3					108.
160587	10					120.
170587	10	2				128.
180587	11	10	5	1		162.
190587	11	8				140.
230587	11	8				136.
240587	9	7	1			154.
250587	8	2				124.
260587	12	9	2			154.
270587	10	7	6	6	2	210.
280587	8					106.
290587	1					104.
300587	6					112.
070687	8	3				126.
090687	3					108.
100687	6					108.
110687	4	1				122.

Site : WALDHOF, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
140687	9	3				138.
150687	5					110.
170687	4					116.
190687	9	6				138.
220687	1					110.
110787	3					120.
150787	7	3				150.
170787	4	3				146.
180787	2					108.
190787	4					118.
200787	2					112.
210787	2					104.
220787	3	2				134.
230787	4	2				126.
070887	6	2				122.
120887	3					118.
130887	7	2				126.
170887	7	2				134.
180887	1					106.
210887	9	8	7	6		196.
220887	15	15	11	8	1	206.
230887	8	5				150.
240887	11	5				138.
250887	1					102.
010987	8	2				132.
030987	5	2				124.
040987	10	7	3	2		166.
Total number of hours	547	262	93	71	4	
Total number of days	74	43	16	12	3	

Site : SCHAUINSLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
020487	6				108.
030487	10				110.
040487	3				104.
060487	4				108.
070487	7				110.
140487	6				112.
150487	21	10			142.
160487	24	10			142.
170487	19	8			142.
180487	24	13	1		152.
190487	21	17			146.
220487	3				104.
230487	16	9			140.
240487	24	24	3		160.
250487	24	11			136.
260487	14				116.
270487	13	3			138.
280487	20	8			142.
290487	24	24	8	6	170.
300487	24	5			130.
010587	21	8			136.
020587	18	1			124.
080587	13	6			130.
090587	24	19	4	2	166.
100587	24	15			138.
110587	5				110.
160587	1				106.
170587	17				114.
180587	10				104.
190587	3				104.
200587	2				104.
230587	5				110.
240587	21	5			130.
250587	24	14			138.
260587	24	23	3	1	164.
270587	6				120.
280587	16	9			130.
290587	18	7			140.
300587	12	5			138.
310587	18	8			128.
010687	7				112.
020687	21				118.
030687	13				116.
040687	1				102.
100687	1				102.
110687	12				118.
120687	10				108.

Site : SCHAUINSLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
130687	12				114.
160687	3				106.
170687	13				110.
210687	10				112.
250687	7				108.
270687	8				110.
280687	13				116.
290687	17	13	10	10	188.
300687	23	18			150.
010787	23	12	3		152.
020787	24	13	5	3	166.
030787	24	14	5	4	182.
040787	23	14	4	4	180.
050787	24	17			134.
060787	22	14	9	9	192.
070787	24	24	2		158.
080787	24	16			138.
090787	19	14			142.
100787	22	21	7	5	170.
110787	24	24	12	7	172.
120787	24	22	13	7	166.
130787	20	15	8	6	176.
140787	23	21	9	7	196.
150787	22	12	1	1	164.
160787	19				114.
170787	3				110.
220787	1				102.
230787	8				106.
240787	13	6			136.
250787	12	1			122.
310787	1				120.
060887	1				102.
070887	5				110.
080887	14				108.
090887	7				110.
110887	10				120.
120887	12				116.
130887	14	5			138.
140887	24	11			142.
150887	7				112.
160887	12	7			144.
170887	12	9	5	3	174.
190887	2				110.
200887	12	8	5	5	170.
210887	15	12	9	8	190.
220887	23	18	5	3	174.
230887	6	3			140.
300887	9	3			130.

Site : SCHAUINSLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
310887	12	4			132.
010987	21	1			122.
020987	15	3			126.
030987	18	5			136.
040987	20	4			124.
050987	8				120.
130987	11				118.
140987	12				120.
150987	3				118.
160987	13	6			136.
170987	23	5			132.
180987	19	9			142.
190987	14	10	2		154.
200987	21	8			130.
210987	18	7			136.
220987	5				110.
Total number of hours	1577	691	133	91	
Total number of days	111	63	23	18	

Site : WESTERLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
190487	6	3				128.
240487	11	7	1			152.
250487	16	10				148.
260487	4	1				126.
280487	10	5				136.
290487	14	12	6	4		164.
300487	16	9	1			158.
010587	3					112.
020587	13					116.
030587	23					116.
050587	10					110.
060587	9					104.
080587	6					110.
090587	18	6				136.
160587	3					108.
170587	6					114.
180587	10	1				126.
190587	1					102.
230587	7					116.
240587	1					110.
250587	2					104.
260587	4					110.
270587	4					108.
280587	12					114.
290587	12					110.
300587	6					110.
010687	3					114.
020687	2					102.
040687	2					102.
050687	4					110.
060687	2					106.
070687	8					108.
080687	1					102.
110687	1					104.
130687	5	3				126.
140687	8					108.
150687	5					104.
220687	3					114.
230687	5					120.
010787	3					110.
060787	10	5				136.
070787	14	11	3	1		168.
080787	4	3				132.
160787	6					118.
180787	2					106.
190787	6	1				126.

Site : WESTERLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
230787	11	5				132.
240787	4					120.
120887	7					110.
130887	1					104.
180887	1					108.
190887	1					116.
210887	12	11	9	8		190.
220887	17	16	12	10	3	222.
230887	16	1				134.
240887	4					104.
Total number of hours	395	110	32	23	3	
Total number of days	56	18	6	4	1	

Site : UTOE, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
010487	3				104.
020487	9				116.
030487	23	14			138.
040487	23	7			135.
050487	21	3			121.
060487	3				109.
090487	8				109.
100487	15	4			131.
110487	20	1			121.
120487	13				107.
130487	2				102.
200487	6				104.
210487	2				107.
220487	5				107.
270487	9				106.
280487	6				117.
290487	21	11			150.
300487	23	23	3		156.
010587	23	23	15	5	169.
020587	12	3			130.
030587	1				104.
150587	3				107.
160587	8	3			126.
170587	3				110.
180587	7				112.
190587	23				118.
200587	14	1			127.
010687	5				106.
020687	1				104.
050687	12	3			126.
080687	6				120.
090687	8				105.
100687	22	4			123.
110687	2				112.
120687	23	2			123.
130687	4				111.
150687	2				102.
180687	10				117.
190687	1				104.
210687	3				116.
220687	3				119.
230687	17	7			135.
240687	12	2			121.
250687	18				118.
270687	4				105.
060787	9				120.

Site : UTOE, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
070787	22	20	2		155.
080787	19	8			144.
090787	2				111.
200787	3				112.
210787	2				103.
220787	11	8			141.
230787	4				106.
240787	4				108.
150887	3				112.
230887	11				120.
270887	4				105.
Total number of hours	553	147	20	5	
Total number of days	57	19	3	1	

Site : AHTARI, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
010487	8				117.
020487	14				115.
030487	8	7			140.
040487	13	10			139.
050487	18	15			135.
090487	3				102.
100487	8				113.
110487	11	5			123.
120487	16				109.
130487	5				106.
140487	7				110.
150487	7				111.
160487	9				103.
220487	7				112.
260487	6				108.
270487	10				109.
280487	7				107.
290487	10	6			128.
300487	13	9	3	2	185.
010587	23	16	10	1	162.
020587	12	11			149.
150587	3				118.
160587	13	5			124.
170587	16				116.
180587	6				109.
190587	8				103.
200587	8				117.
210587	12				111.
220587	9				105.
260587	5				104.
270587	1				101.
020687	4				103.
030687	8				115.
060687	16	1			123.
Total number of hours	324	85	13	3	
Total number of days	34	10	2	2	

Site : EIBERGEN, NETHERLANDS
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
020487	1					102.
030487	7					111.
180487	5					119.
220487	5					109.
230487	1					103.
240487	8	3				134.
250487	12	9	7	5		196.
260487	8	6				139.
270487	3					105.
280487	7	4				130.
290487	6	3				144.
300487	5	1				124.
020587	7					115.
030587	6					111.
040587	5					102.
050587	1					101.
080587	2					104.
090587	8	4				144.
100587	2					108.
170587	7					117.
180587	4					108.
190587	3					105.
230587	6					115.
240587	8					111.
250587	4					108.
260587	12	8				143.
270587	3	1				124.
280587	2					106.
060687	1					105.
100687	3					108.
110687	6					119.
120687	12	7				137.
140687	12	10				148.
150687	5					108.
160687	7					114.
170687	2					111.
180687	9	1				121.
210687	9	6				138.
220687	2					114.
230687	9	6				131.
240687	1					102.
040787	9	6				130.
050787	10	2				125.
060787	10	7	5	2		168.
070787	15	14	11	10	5	222.
080787	10	4				137.

Site : EIBERGEN, NETHERLANDS
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
100787	3					108.
110787	11	10	8	4		183.
120787	2					104.
140787	10	7				150.
150787	6					108.
160787	4	4	3	2		167.
220787	5					114.
230787	3	1				129.
070887	3					104.
160887	5	2				130.
170887	6	4				131.
210887	8	6	3			159.
220887	7	6	1			158.
010987	2					116.
030987	5	1				133.
170987	3					118.
Total number of hours	363	143	38	23	5	
Total number of days	62	28	7	5	1	

Site : WITTEVEEN, NETHERLANDS
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
020487	2					105.
030487	7					111.
150487	1					102.
170487	2					101.
180487	11	8	4	2		161.
230487	2					110.
240487	9	8	4			159.
250487	11	9	3			158.
260487	8	2				139.
280487	10	4	1			152.
290487	6	5	2			159.
300487	8					117.
020587	7					107.
030587	4					102.
040587	6					103.
080587	1					
090587	8	3				
170587	3					
180587	10					
190587	5					
230587	10					
240587	8	2				
250587	1					
260587	9	7				
280587	4					
070687	2					
110687	1					104.
120687	6					119.
140687	10					111.
150687	5					104.
170687	5					111.
210687	5					111.
300687	6	2				134.
020787	6					104.
030787	5					112.
040787	8					114.
050787	10	8				138.
060787	11	9	6	5		181.
070787	12	12	10	10	8	219.
080787	10	8	2	1		161.
090787	7	2				123.
100787	9	4	3	3		185.
170887	8	6	4	4		171.
200887	3					106.
210887	9	8	6	6		191.

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Site : WITTEVEEN, NETHERLANDS
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
220887	7	5	3			159.
030987	1					110.
Total number of hours	299	112	48	31	8	
Total number of days	47	19	12	7	1	

Site : BIRKENES, NORWAY
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
030487	14	9			132.
040487	24	17			138.
050487	18	16			126.
060487	15	4			130.
070487	12				120.
080487	1				102.
120487	5				104.
130487	1				102.
140487	4				108.
150487	9				106.
160487	9				112.
170487	13				108.
210487	2	1			128.
240487	8	7			134.
250487	9				118.
270487	14	12			146.
280487	21	15	10	6	184.
290487	12	11	7	6	196.
300487	7	7	5	4	174.
020587	12				116.
030587	9				108.
050587	14				120.
060587	19				116.
070587	4				104.
080587	10				118.
090587	6				108.
100587	2				104.
150587	4				104.
160587	7				110.
170587	4				104.
180587	17				116.
190587	10				114.
230587	7				120.
240587	4				116.
250587	3				102.
300587	11				114.
030687	2				104.
040687	1				102.
050687	1				102.
240687	1				104.
040787	5				114.
050787	5				110.
060787	13	9			146.
070787	9	3			128.
020887	1				118.
Total number of hours	379	111	22	16	
Total number of days	45	12	3	3	

Site : JELØYA, NORWAY
 Parameter: OZONE, UG/M3
 Period : 6 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
060487	3				112.
070487	8				115.
080487	3				111.
120487	3				104.
130487	3				103.
150487	3				110.
160487	8				113.
170487	14				113.
230487	1				105.
250487	2				105.
280487	6				118.
290487	4				111.
300487	6	3			131.
010587	15	3			127.
020587	13	7			140.
030587	21	14			140.
040587	1				103.
050587	6				119.
060587	22	10			136.
070587	11	4			126.
080587	14	2			129.
090587	7				115.
100587	7				108.
110587	13				112.
130587	3				101.
140587	14				111.
150587	10				114.
160587	5				111.
180587	14	4			123.
190587	11				113.
210587	12				110.
220587	10				119.
230587	14	7			141.
240587	7				115.
250587	5				112.
260587	9				118.
270587	1				102.
290587	7				118.
300587	3				105.
020687	9	1			124.
030687	6				118.
040687	16	4			121.
050687	19	9			134.
060687	21	3			121.
070687	17	1			121.
080687	3				102.
110687	5				105.

Site : JELØYA, NORWAY
 Parameter: OZONE, UG/M3
 Period : 6 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
130687	7				105.
140687	2				105.
190687	1				102.
200687	4				102.
210687	4				109.
220687	2				102.
230687	8	2			128.
240687	10	3			125.
250687	6				109.
260687	2				102.
280687	5				115.
290687	1				102.
300687	2				106.
030787	1				102.
040787	3				115.
050787	12				119.
060787	13	11	4	3	170.
070787	18	10	1		154.
150787	5				106.
190787	1				103.
210787	5				119.
220787	11	7	1	1	170.
230787	16	14			135.
240787	3				116.
120887	1				100.
130887	10	7			142.
140887	9	3			129.
150887	1				100.
170887	3				113.
200887	1				100.
210887	13	4			129.
220887	1				104.
230887	1				100.
020987	2				104.
060987	1				101.
Total number of hours	600	133	6	4	
Total number of days	82	23	3	2	

Site : LANGESUND, NORWAY
 Parameter: OZONE, UG/M3
 Period : 2 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
030487	17	7			129.
040487	24	14			138.
050487	19	9			129.
060487	10				115.
070487	10				110.
080487	5				106.
120487	1				101.
130487	1				101.
150487	5				106.
160487	18				110.
170487	17				106.
180487	2				101.
230487	5				101.
240487	8				115.
250487	9				120.
280487	11	3			124.
290487	11	1			138.
300487	3				110.
220587	4				108.
230587	1				103.
300587	4				108.
030687	2				108.
240687	1	1	1	1	171.
130787	1				108.
210787	3				102.
220787	8	5	1		152.
230787	10				118.
130887	10	9			135.
140887	8	1			130.
150887	2				104.
210887	3				109.
Total number of hours	233	50	2	1	
Total number of days	31	9	2	1	

Site : SVANVIK, NORWAY
Parameter: OZONE, UG/M3
Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	>100	Maximum 1-h concentration
240487	1	102.
010587	5	120.
190687	2	104.
280987	1	120.
Total number of hours	9	
Total number of days	4	

Site : ASPVRETEN, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
020487	8		117.
030487	24	11	136.
040487	18		116.
050487	9		114.
280487	10		112.
290487	13	2	132.
300487	18	9	132.
010587	10	5	127.
250587	1		103.
110687	2		102.
220687	1		102.
060787	6	4	142.
070787	2		107.
Total number of hours	122	31	
Total number of days	13	5	

Site : NORRA KVILL, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
020487	3				104.
030487	15				120.
040487	13	1			122.
050487	13	3			126.
060487	12				116.
070487	7				108.
280487	18	9	1	1	171.
290487	16	3			144.
300487	18	16	7	2	164.
010587	20	8	2		154.
020587	4				108.
030587	6				109.
160587	5				120.
180587	9				110.
190587	5				104.
220587	4				106.
230587	2				102.
240587	1				104.
250587	2				104.
040687	2				102.
060687	4				102.
070687	1				102.
110687	9				112.
120687	5	2			134.
130687	9				106.
210687	13	11			139.
220687	20	10			134.
300687	1				106.
050787	10	1			125.
060787	15	12	6	4	184.
070787	24	21	4	2	167.
080787	20	8	3	1	161.
230787	4				104.
240787	1				105.
230887	9	6			130.
Total number of hours	320	111	23	10	
Total number of days	35	14	6	5	

Site : SENNEN, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
020487	9		109.
030487	15		120.
040487	8		104.
050487	14		109.
060487	12		119.
240487	5		107.
280487	13	8	144.
290487	8	7	137.
300487	11	4	130.
010587	1		103.
090587	4		111.
100587	2		109.
150587	7		114.
160587	2		102.
180587	6		115.
040687	3		107.
050687	4		110.
060687	2		105.
090687	2		107.
110687	13	8	136.
060787	1		103.
220887	5	1	124.
230887	4		107.
Total number of hours	151	28	
Total number of days	23	5	

Site : RØRVIK, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
030487	14	6	125.
040487	22		113.
050487	8		111.
060487	1		101.
290487	9	3	128.
150587	5		107.
170587	7		109.
180587	4		112.
190587	1		101.
220587	3		102.
230587	7		116.
260587	5		110.
290587	3		105.
310587	2		101.
020687	3		103.
030687	3		105.
040687	1		103.
050687	3		108.
050787	5		112.
210887	7		116.
220887	1		110.
230887	4	1	122.
Total number of hours	118	10	
Total number of days	22	3	

Site : VAVIHILL, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
020487	7				111.
030487	16				120.
040487	12				115.
050487	7				115.
060487	14				117.
190487	4				106.
240487	7	4			135.
250487	10	3			125.
280487	6	3			126.
290487	16	13	2		152.
300487	19	13	7	6	182.
010587	5				112.
030587	10				113.
050587	3				109.
080587	2				107.
090587	11	4			150.
150587	5				111.
160587	4				113.
180587	2				103.
220587	4				106.
230587	8				116.
240587	1				105.
250587	5				106.
260587	8	1			121.
270587	8	2			125.
020687	4				104.
030687	1				102.
050687	1				103.
110687	10	5			134.
130687	5				113.
200687	1				101.
210687	7	3			126.
300687	2				116.
050787	9	7	1		151.
060787	12	11	7	6	188.
070787	14	8			149.
230787	2				108.
220887	14	8			144.
230887	8	4			144.
020987	1				108.
040987	1				102.
050987	4				106.
Total number of hours	290	89	17	12	
Total number of days	42	15	4	2	

Site : VINDELN, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration		
	>100	>120	
020487	4		108.
030487	5		112.
040487	14		112.
050487	11		106.
100487	3		103.
110487	13		115.
120487	5		105.
140487	1		101.
300487	4	1	121.
010587	16	11	148.
110587	3		106.
160587	5		112.
170587	4		107.
200587	5		107.
060687	3		104.
070687	9		113.
190687	8		116.
220687	5		112.
230687	9		113.
240687	10		120.
260687	8		109.
Total number of hours	145	12	
Total number of days	21	2	

Site : AMMARNAES, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 29 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
030487	15	108.
040487	23	111.
050487	4	108.
110487	11	105.
120487	8	102.
290487	3	104.
300487	4	109.

010587	11	116.
060587	1	101.

230687	1	104.
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Total
 number of hours 81

Total
 number of days 10

Site : STORMYRSBERGET, SWEDEN
 Parameter: OZONE, UG/M3
 Period : 4 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	Maximum 1-h concentration
290487	7		119.
300487	10	6	128.

Total
 number of hours 17 6

Total
 number of days 2 1

Site : PAYERNE, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	Maximum 1-h concentration
060487	6	2					123.
070487	2						103.
080487	7						117.
100487	1	1					130.
150487	9	5					131.
160487	8	6					133.
170487	9	7	2				154.
180487	8	6					138.
190487	8	3					129.
220487	3						107.
230487	6	4					135.
240487	9	8					150.
250487	5						119.
260487	8						109.
270487	9	7					140.
280487	9	6					144.
290487	12	8	4	3			166.
300487	9	6					131.
010587	9	7					138.
020587	10	7	1				156.
030587	1						107.
080587	4						109.
090587	8	6					131.
100587	2						105.
230587	3						109.
240587	5						109.
250587	8						115.
260587	8	3					129.
300587	5						109.
100687	1						103.
110687	2						109.
120687	3						105.
130687	2						107.
270687	1						101.
280687	4						105.
290687	10	5	2	2			168.
300687	11	9	3	1			166.
010787	4	3	2	1			183.
020787	11	9					146.
030787	6	2					133.
040787	12	8					148.
050787	6	1					125.
060787	8	6	4	3			183.
070787	7	5					135.
090787	8						109.
100787	10	7					140.

Site : PAYERNE, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	Maximum 1-h concentration
110787	10	7					148.
120787	10	5					140.
130787	12	10	2				158.
140787	11	9	5	4	2		216.
150787	5						107.
160787	4						113.
250787	2						107.
080887	3						105.
120887	7	2					123.
130887	7						117.
140887	5						119.
160887	7	3					125.
170887	9	3					134.
200887	7	2					127.
210887	8	7	4	1			168.
220887	6	2	1				156.
290887	2						103.
300887	5						113.
310887	6	3					131.
010987	5	2					125.
020987	6						117.
030987	5	3					125.
040987	3						117.
150987	4	2					127.
160987	9	8	5	5	3		215.
170987	7	7	4	4	2	1	252.
180987	5	4	3	2			177.
190987	7	4	2	2			189.
210987	4	3					127.
220987	4	1					133.
Total number of hours	482	234	44	28	7	1	
Total number of days	76	47	15	11	3	1	

Site : SION, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 8 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
110487	3					103.
130487	5					113.
140487	8					111.
150487	8	1				129.
160487	8	7				138.
170487	8	5				135.
180487	10	5				129.
190487	9	2				131.
210487	1					101.
220487	9					115.
230487	10	7				133.
240487	10	9				140.
250487	11	4				133.
260487	7					113.
270487	7					115.
280487	9	7				140.
290487	9	7	1			152.
070587	2	1	1	1	1	238.
080587	10	2				123.
090587	10	7	1			152.
100587	8	3				127.
110587	9					111.
140587	1					101.
170587	1					101.
230587	10	3				125.
240587	11	4				127.
250587	9	2				123.
260587	11	4				127.
270587	5					107.
280587	3					103.
300587	9	1				121.
310587	3					109.
010687	2					105.
020687	9					117.
120687	9	4				127.
130687	7	1				123.
220687	1					103.
230687	1					101.
280687	6					117.
290687	8					119.
300687	10	3				133.
010787	5	1				121.
020787	7	1				140.
030787	8	2				131.
040787	10	6				140.
050787	11					119.

Site : SION, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 8 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
060787	14	9				135.
070787	11	4				127.
090787	12	4				125.
100787	10	8				150.
110787	10	9				150.
120787	11	10				148.
130787	11	3				123.
140787	6	3				138.
030887	2					103.
050887	4					107.
080887	4					111.
110887	6					111.
160987	3	1				121.
170987	1					113.
Total number of hours	433	150	3	1	1	
Total number of days	60	35	3	1	1	

Site : TAENIKON, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 15 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
150487	6	3			123.
160487	6	1			121.
170487	6	5			132.
180487	8	5			132.
190487	12	4			131.
230487	4	4			133.
240487	7	5			131.
250487	11	6	1		155.
260487	4				113.
270487	1				101.
280487	5	1			121.
290487	6	6			147.
300487	5				116.
010587	7	6			132.
020587	8	4			132.
080587	4				103.
090587	6	2			125.
100587	18				118.
230587	1				101.
240587	3				105.
250587	6				117.
260587	6	1			124.
300587	2				112.
020687	6				118.
110687	2				107.
120687	6	2			131.
130687	2				111.
270687	1				102.
290687	6	1			123.
300687	10	8			150.
010787	1				108.
020787	1				101.
040787	3				108.
060787	5	3			148.
070787	1				106.
240787	8	1			122.
250787	2				104.
080887	4				112.
200887	3				104.
210887	6	4			141.
220887	8	6	4	2	180.
010987	2				112.
020987	4				115.
030987	2				105.

Site : TAENIKON, SWITZERLAND
 Parameter: OZONE, UG/M3
 Period : 15 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
130987	3				109.
140987	4				119.
150987	2				119.
160987	2	1			124.
170987	4				118.
180987	4	2			125.
190987	4				118.
200987	5	3			125.
210987	3				118.
220987	3				116.
Total number of hours	259	84	5	2	
Total number of days	54	24	2	1	

Site : HARWELL, UNITED KINGDOM
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	Maximum 1-h concentration
170487	13	13	6	5	1	214.
180487	4					116.
230487	10	5				136.
240487	7	5				144.
260487	2					104.
270487	6	6	3	2		172.
280487	9	6				142.
290487	4					108.
060587	1					106.
080587	1					102.
090587	10	7				138.
240587	1					102.
260587	2					106.
270587	4					114.
200687	6					116.
040787	1					102.
050787	7	5	2	1		172.
060787	5	3				132.
100787	1	1	1	1		176.
140787	2					110.
200887	6					118.
Total number of hours	102	51	12	9	1	
Total number of days	21	9	4	4	1	

Site : SIBTON, UNITED KINGDOM
 Parameter: OZONE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	Maximum 1-h concentration
280487	3	1			130.
290487	8	7			140.
020587	2				106.
230587	3				108.
250587	1				102.
270587	1				102.
290587	2				102.
310587	4				104.
120687	1				102.
140687	4				104.
290687	5	3			134.
020787	5				112.
050787	14	4			140.
060787	12	9	7	5	200.
070787	12	9			146.
110787	2				108.
130787	3				106.
150787	2				114.
160887	6	3			136.
170887	4	2			140.
190887	1				106.
200887	10	8			146.
210887	2				112.
010987	2				106.
Total number of hours	109	46	7	5	
Total number of days	24	9	1	1	

Site : ILLMITZ, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	Maximum 1-h concentration
011087	6	4	1				160.
021087	8	7	5	5	2		219.
031087	10	7	7	7	4		222.
041087	11	10	9	8	4		230.
051087	17	15	15	14	13	5	270.
061087	24	24	20	18	10		230.
071087	11	9	4	3	2		227.
081087	15	15	11	10	5		240.
091087	16	13	9	8	2		212.
101087	15	11	7	7	5	3	255.
111087	16	11	9	7	4		222.
121087	9	5					138.
131087	19	8					144.
151087	12						120.
161087	18	7					126.
181087	6						110.
191087	5	1					121.
201087	11	6					150.
231087	1						104.
241087	5	4					142.
251087	2	1					146.
261087	6						111.
271087	4						117.
291087	12	9	5	3			181.
301087	13	8	1				151.
311087	4	2					145.
011187	15	14	12	10	3	1	242.
021187	6	4	1				153.
031187	9	5	2				159.
041187	7	2					122.
051187	1						111.
061187	3	1					127.
071187	2						108.
121187	5	3					135.
141187	14	13	9	7			196.
151187	8	5					149.
171187	15	14	4	2			170.
181187	18	5					141.
191187	12	8					139.
201187	16	10					149.
211187	2						116.
221187	6	2					135.
231187	9	6	1	1			170.
251187	18	13	6	5			192.
261187	8	1					126.
011287	3						109.
021287	8	5					141.

Site : ILLMITZ, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	>120	>150	>160	>200	>240	Maximum 1-h concentration
041287	10	10	2				152.
051287	6						116.
081287	16	12	7	6			186.
091287	3	1					121.
101287	4	3					136.
111287	5	3					149.
121287	1						106.
141287	3	1					128.
211287	13	6					136.
231287	21	16	5	4			186.
241287	10	6					149.
251287	9	6	4	4			193.
281287	6	6	6	6	1		201.
291287	11	10	7	7			200.
301287	14	13	9	6			182.
311287	16	9	1				152.

Total
 number of hours 609 390 179 148 55 9

Total
 number of days 63 52 28 22 12 3

Site : SCHOENEEN, AUSTRIA
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
061087	1	104.
081187	4	103.

Total
 number of hours 5

Total
 number of days 2

Site : ST. DENIJS, BELGIUM
Parameter: OZONE, UG/M3
Period : 20 NOVEMBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : OFFAGNE, BELGIUM
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 18 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : ULBORG, DENMARK
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : BROTJACKLRIEGEL, FRG
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : DEUSELBACH, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

No hourly values exceeding 100

Site : WALDHOF, FRG
 Parameter: OZONE, UG/M3
 Period : 10 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
181087	1	102.

Total
 number 1
 of hours

Total
 number 1
 of days

Site : SCHAUINSLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	>100	Maximum 1-h concentration
291287	1	102.

Total
 number 1
 of hours

Total
 number 1
 of days

Site : WESTERLAND, FRG
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

No hourly values exceeding 100

Site : UTOE, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

No hourly values exceeding 100

Site : AHTARI, FINLAND
 Parameter: OZONE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h	
	>100	>120 concentration
071087	2	1 129.
081087	3	117.
Total number of hours	5	1
Total number of days	2	1

Site : EIBERGEN, NETHERLANDS
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : WITTEVEEN, NETHERLANDS
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : BIRKENES, NORWAY
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : SVANVIK, NORWAY
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : ASPVRETEN, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : NORRA KVILL, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : SENNEN, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : RØRVIK, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : VAVIHILL, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : VINDELN, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : AMMARNAES, SWEDEN
Parameter: OZONE, UG/M3
Period : 5 OCTOBER - 28 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : STORMYRSBERGET, SWEDEN
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 16 NOVEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : STORULVSJÖN, SWEDEN
Parameter: OZONE, UG/M3
Period : 19 NOVEMBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : PAYERNE, SWITZERLAND
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 28 NOVEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : SION, SWITZERLAND
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : TAENIKON, SWITZERLAND
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 4 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : HARWELL, UNITED KINGDOM
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 100

Site : SIBTON, UNITED KINGDOM
Parameter: OZONE, UG/M3
Period : 1 OCTOBER - 29 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	>100	Maximum 1-h concentration
071287	1	104.

Total
number of hours 1

Total
number of days 1

APPENDIX B

Summary of nitrogen dioxide data

- 1) October 1986 - March 1987 page 123
- 2) April - September 1987 " 147
- 3) October - December 1987 " 161

The tables give the number of hours per day, and the number of days, with hourly concentrations exceeding given limits.

Site : SCHOENEUBEN, AUSTRIA
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
051186	5		52.
271186	2		45.
021286	2		50.
041286	2		46.
061286	1		48.
101286	3		44.
111286	1		43.
161286	3		60.
231286	2		48.
150187	8		48.
170187	5		54.
180187	1		41.
190187	1		41.
220187	1		51.
230187	19	4	89.
240187	17	9	92.
250187	10		67.
280187	11		53.
290187	2		47.
060287	3		51.
070287	1		41.
130287	11		69.
140287	4		50.
150287	6		55.
160287	23		64.
170287	4		41.
220287	2		46.
230287	7		53.
270287	2		42.
010387	3		54.
200387	5		57.
210387	1		41.
270387	1		48.
280387	1		51.
Total number of hours	170	13	
Total number of days	34	2	

Site : GENT ST. KRUISWINKEL, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
031086	2			62.
131086	7	1		83.
141086	2			48.
151086	5			46.
161086	3			51.
171086	14			58.
181086	4			51.
191086	1			44.
211086	4			45.
221086	3			42.
241086	4			46.
251086	2			46.
261086	4			54.
271086	2			52.
291086	5			57.
301086	2			42.
311086	10			60.
021186	2			50.
031186	13			65.
041186	12			55.
051186	14			60.
061186	8			63.
071186	9			49.
081186	6			50.
121186	10			62.
151186	8			55.
161186	1			41.
171186	8			59.
181186	2			56.
191186	6			49.
201186	8			58.
211186	5			52.
221186	4			45.
231186	1			44.
241186	9			55.
251186	3			52.
261186	8			57.
271186	18			70.
281186	8	1		88.
291186	23			63.
301186	16			56.
011286	4			42.
121286	8	1		88.
131286	6	1		83.
141286	4			48.
151286	4	1		82.
161286	13	6		113.

Site : GENT ST. KRUISWINKEL, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
171286	11	3		115.
191286	4			52.
221286	3			45.
231286	3			46.
241286	8			78.
251286	1			41.
261286	3			46.
301286	1			43.
010187	2			42.
030187	2			44.
070187	11			59.
080187	19			74.
090187	9			49.
100187	5			49.
120187	11			57.
130187	11			52.
140187	24			66.
150187	1			44.
160187	10			49.
170187	24			72.
180187	24			66.
190187	22			68.
200187	24			80.
210187	24	14		109.
220187	23	15		107.
230187	13			57.
240187	9			50.
250187	10			47.
260187	8			58.
270187	15	3		97.
280187	13			60.
290187	11			58.
300187	24			68.
310187	24	1		81.
010287	24	2		81.
020287	24	5		98.
030287	10			54.
040287	10			49.
050287	12			71.
070287	5			49.
080287	3			41.
090287	3			42.
100287	10			57.
110287	15			70.
120287	15			73.
130287	23	1		86.
140287	22			72.
150287	12			60.

Site : GENT ST. KRUISWINKEL, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
160287	14			75.
170287	14			63.
180287	8			59.
190287	11			60.
200287	7			50.
210287	4			55.
230287	13			80.
240287	20	5		93.
250287	23	7		114.
260287	22	16	4	127.
270287	12			64.
280287	6			65.
010387	5			46.
020387	2			51.
030387	6			74.
040387	14			74.
050387	24	9		108.
060387	23	12		105.
070387	7	4		90.
090387	13	2		93.
100387	15			74.
110387	23	11		95.
120387	22	9		97.
130387	22	19		115.
140387	23	12		107.
150387	13	3		89.
160387	2			54.
170387	12			64.
180387	9			65.
190387	13			63.
200387	11			67.
220387	2			44.
230387	16			70.
240387	7			71.
250387	7			63.
260387	13			72.
270387	6			53.
280387	9			61.
300387	9			70.
310387	17			80.
Total number of hours	1409	164	4	
Total number of days	135	26	1	

Site : ST. DENIJS, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
011086	23	8		100.
021086	23	18		119.
031086	21	16		96.
041086	14	6		108.
051086	10			65.
061086	22	9	5	125.
071086	23	7		95.
081086	23	3		86.
091086	23	4		86.
101086	23	1		81.
111086	22			68.
121086	21	2		88.
131086	21			77.
141086	21			69.
151086	23			61.
161086	23			71.
171086	23			74.
181086	22	7		103.
191086	22			51.
201086	21			58.
211086	20			58.
221086	21			71.
231086	23			62.
241086	22	2		91.
251086	22			67.
261086	23			67.
271086	23			67.
281086	2			48.
291086	21			76.
301086	23	1		81.
311086	23			61.
011186	13			51.
021186	15			63.
031186	19			72.
041186	17			77.
051186	14			72.
061186	4			61.
071186	4			75.
171186	1			45.
201186	1			49.
211186	1			47.
261186	3			49.
271186	4			50.
291186	3			44.
301186	3			49.
021286	1			46.
031286	13			60.

Site : ST. DENIJS, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
041286	8			69.
051286	5			50.
061286	5			50.
091286	5			50.
101286	2			43.
161286	7			50.
231286	7			60.
241286	17			70.
261286	2			50.
030187	4			49.
040187	3			49.
070187	10			54.
080187	17			50.
090187	4			49.
120187	9			60.
130187	22			59.
140187	23			70.
150187	13			59.
160187	11			59.
170187	23			76.
180187	22			73.
190187	23			63.
200187	23			78.
210187	23	14		120.
220187	23	16	2	128.
230187	20			71.
240187	1			41.
250187	13			50.
260187	11			69.
270187	16			80.
280187	20			74.
290187	20			54.
300187	23			71.
310187	22	8		101.
010287	23	1		82.
020287	22			79.
030287	6			69.
070287	8			62.
080287	5			59.
100287	6			74.
110287	15	2		84.
120287	20			80.
130287	15			61.
140287	14			78.
150287	11			68.
160287	7			75.
170287	14			65.
180287	20			59.

Site : ST. DENIJS, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
190287	11			65.
200287	16			58.
210287	9			60.
230287	8			62.
240287	23			78.
250287	23	2		90.
260287	12	10		100.
270287	2			55.
280287	3			57.
010387	2			48.
030387	8			79.
040387	11			69.
050387	3			48.
060387	20	4		111.
070387	9	6		120.
080387	7	3		84.
090387	21	2		100.
100387	20	6		117.
110387	12	6		110.
120387	23	17		108.
130387	21	16	2	132.
140387	23	16		116.
150387	10	8		97.
160387	6			70.
170387	1			44.
190387	7			73.
200387	8			65.
210387	3			49.
220387	3			53.
240387	5			61.
250387	1			41.
260387	5			54.
290387	2			48.
300387	18	1		82.
310387	23			72.
Total number of hours	1785	222	9	
Total number of days	130	31	3	

Site : OFFAGNE, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration		
	> 40	> 80	
091086	2		51.
101086	1		46.
131086	6		50.
141086	5		59.
161086	6		55.
171086	5		47.
181086	5		50.
141186	1		42.
071286	1		41.
111286	9		60.
121286	10		50.
131286	1		41.
221286	1		44.
231286	1		45.
241286	4		58.
070187	2		41.
090187	7		59.
100187	18		59.
110187	9		57.
120187	15		62.
130187	11		61.
140187	14		80.
150187	23		74.
160187	17		65.
170187	4		64.
190187	11		80.
200187	15		74.
210187	7		59.
220187	11		68.
230187	23		70.
240187	2		49.
270187	2		51.
280187	3		51.
010287	19	5	106.
020287	13		74.
040287	2		47.
050287	12		50.
110287	4		55.
120287	4		61.
140287	3		53.
150287	6		60.
160287	4		50.
180287	10		60.
190287	6		50.
200287	8		53.

Site : OFFAGNE, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
210287	8		57.
250287	8		75.
260287	18	3	92.
Total number of hours	377	8	
Total number of days	48	2	

Site : UTOE, FINLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
021086	1	1	100.
291086	1	1	100.
091186	1	1	100.
131186	1	1	100.
251186	1	1	100.
140187	2		66.
150187	1		73.
110287	1	1	100.
180287	1	1	100.
280287	1	1	100.
140387	1	1	100.
310387	1	1	100.
Total number of hours	13	10	
Total number of days	12	10	

Site : AHTARI, FINLAND
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 12 - 31 March 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
120387	1		46.
130387	2		55.
170387	1	1	100.
200387	1	1	100.
250387	3		56.
310387	1	1	100.
Total number of hours	9	3	
Total number of days	6	3	

Site : EIBERGEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
011086	15	5	2	122.
021086	19			73.
051086	11	6		98.
061086	7			52.
071086	19			66.
101086	14	4		94.
111086	11			69.
121086	1			43.
131086	15	9		116.
181086	15	6		117.
201086	2			62.
221086	11			50.
231086	2			45.
241086	2			71.
251086	6			77.
271086	13			59.
281086	13			54.
291086	7			69.
301086	19			69.
311086	12			61.
011186	4			60.
031186	16			67.
041186	5			50.
051186	13			46.
061186	6			56.
071186	19			56.
081186	8			59.
091186	12			73.
101186	6			68.
111186	8			67.
121186	9			60.
131186	24			79.
141186	20			77.
151186	16			74.
161186	12			62.
171186	5			52.
201186	3			60.
211186	20			61.
221186	5			57.
261186	4			51.
271186	14			56.
281186	24			67.
291186	21			61.
301186	24			74.
011286	5			60.
021286	4			44.
031286	2			48.

Site : EIBERGEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
041286	3			48.
061286	7			49.
071286	19			74.
081286	23			61.
091286	10			63.
101286	21			56.
111286	18	2		85.
121286	24			61.
131286	20			59.
151286	14			61.
161286	5			58.
171286	17			58.
181286	1			43.
201286	2			47.
221286	1			41.
241286	4			45.
251286	13			49.
261286	6			50.
271286	1			45.
010187	1			45.
080187	15			72.
090187	19			61.
130187	3			51.
140187	21			58.
170187	16			61.
180187	23			60.
190187	24			66.
200187	24			66.
210187	24	11	2	123.
220187	24	24	18	147.
230187	12	7	4	147.
250187	15			47.
260187	1			44.
270187	18			65.
280187	5			64.
300187	13			64.
310187	22			79.
010287	24	3		113.
020287	23			74.
030287	24	13		98.
040287	5			67.
050287	17			60.
060287	1			41.
080287	1			41.
090287	1			47.
100287	2			45.
110287	14			70.
120287	4			51.

Site : EIBERGEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
130287	8			49.
140287	6			46.
150287	2			42.
240287	5			50.
250287	1			45.
260287	13	8		106.
270287	7			73.
130387	22			78.
140387	8			74.
150387	16	3		88.
170387	15			68.
180387	2			44.
190387	2			46.
200387	7			65.
210387	4			59.
230387	4			45.
240387	8			58.
250387	15			64.
260387	3			64.
270387	5			55.
300387	12			67.
310387	17			75.
Total				
number of hours	1310	101	26	
Total				
number of days	117	13	4	

Site : WITTEVEEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
011086	7		70.
021086	6		67.
031086	2		49.
051086	3		59.
071086	6		46.
091086	11		57.
101086	13		57.
111086	1		48.
131086	8		65.
141086	21	4	90.
151086	13		74.
161086	6	1	83.
171086	8		50.
181086	14	2	111.
201086	2		49.
221086	1		41.
231086	1		42.
241086	1		43.
251086	3		68.
271086	2		45.
291086	2		41.
301086	9		57.
311086	6		54.
011186	6		57.
031186	10		68.
041186	1		42.
051186	15		58.
071186	21		65.
081186	4		56.
091186	7		74.
101186	1		42.
121186	6		57.
131186	24		69.
141186	16		74.
151186	11		54.
161186	5		54.
171186	7		56.
201186	4		58.
211186	22		65.
221186	6		57.
241186	8		60.
261186	3		49.
271186	14		62.
281186	24		72.
291186	23		62.
301186	24		70.
011286	22		67.

Site : WITTEVEEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h		concentration
	> 40	> 80	
021286	14		55.
031286	7		48.
041286	11		56.
051286	2		47.
061286	2		42.
071286	11		57.
081286	24		64.
091286	14		63.
101286	19		54.
111286	5		54.
171286	1		43.
221286	1		43.
231286	4		43.
241286	2		47.
251286	3		43.
080187	7		59.
090187	1		44.
130187	1		45.
140187	17		54.
170187	11		57.
180187	17		54.
190187	22		55.
200187	24		68.
210187	24		70.
220187	24	10	100.
230187	2		60.
270187	4		73.
300187	6		50.
310187	24	5	91.
010287	24	6	92.
020287	24		73.
030287	19		78.
040287	7		61.
050287	24		60.
060287	6		63.
090287	4		45.
100287	6		50.
110287	10		61.
120287	5		45.
130287	13		57.
140287	19		59.
150287	5		54.
240287	3		50.
250287	6		61.
260287	24	5	100.
270287	15	3	93.
040387	11		73.

Site : WITTEVEEN, NETHERLANDS
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
050387	18		67.
060387	9		52.
140387	1		50.
150387	8		71.
170387	6		60.
210387	6		57.
300387	2		42.
310387	3		43.

Total
number of hours 1012 36

Total
number of days 102 8

Site : PAYERNE, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 30 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	> 40	> 80
011086	2	74.
021086	3	48.
031086	8	72.
041086	3	54.
051086	2	52.
061086	4	68.
071086	3	54.
101086	4	61.
111086	5	52.
131086	4	59.
141086	4	54.
151086	5	52.
161086	5	72.
171086	3	43.
181086	1	50.
211086	1	43.
241086	3	52.
271086	4	48.
281086	7	54.
291086	13	48.
301086	4	45.
311086	7	52.
031186	1	42.
041186	7	48.
051186	19	70.
061186	19	76.
071186	16	63.
081186	3	43.
091186	3	43.
101186	6	67.
111186	7	56.
121186	13	65.
131186	13	58.
141186	15	63.
151186	11	56.
161186	8	52.
171186	8	65.
181186	4	50.
191186	10	60.
201186	9	52.
211186	1	41.
241186	3	43.
251186	7	54.
261186	6	61.
271186	1	45.
281186	10	54.
291186	18	48.
301186	7	43.

Site : PAYERNE, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 30 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration		
	> 40	> 80	
011286	8		46.
021286	22		54.
031286	24		56.
041286	24		60.
051286	24		61.
061286	17		58.
081286	5		45.
091286	5		50.
101286	6		45.
111286	8		46.
121286	5		45.
131286	11		46.
151286	3		61.
241286	7		54.
251286	1		46.
040187	3		46.
070187	2		50.
080187	6		60.
090187	13		63.
100187	23		71.
110187	9		69.
120187	4		54.
130187	19		78.
140187	24	6	91.
150187	24	8	97.
160187	24	2	82.
170187	24		67.
180187	18		56.
190187	20		52.
200187	15		52.
210187	15		48.
220187	17		52.
230187	21	1	82.
240187	7		80.
260187	8	2	98.
270187	10		80.
280187	22		69.
290187	4		48.
300187	7		69.
310187	18		69.
010287	10		48.
020287	13		65.
030287	24	5	91.
040287	24	9	115.
050287	23		71.
060287	15		74.
070287	3		50.
090287	9		61.

Site : PAYERNE, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER 1986 - 30 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
100287	12		56.
110287	8		52.
120287	5		67.
130287	1		44.
150287	9		54.
250287	4		46.
260287	4		44.
080387	4		72.
100387	3		44.
110387	5		67.
120387	6		48.
130387	13		58.
140387	1		47.
150387	4		56.
170387	1		41.
210387	1		43.
250387	3		48.
260387	1		45.

Total
 number 1053 33
 of hours

Total
 number 114 7
 of days

Site : SION, SWITZERLAND
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 - 16 OCTOBER 1986

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	Maximum 1-h concentration
011086	8	56.
021086	9	69.
031086	9	74.
041086	9	56.
051086	5	47.
061086	4	65.
071086	5	65.
081086	4	65.
091086	5	56.
101086	8	60.
111086	9	56.
121086	6	47.
131086	5	56.
141086	1	42.
151086	3	65.
161086	1	47.

Total
number of hours 91

Total
number of days 16

Site : TAENIKON, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1986

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	> 40	> 80
011086	10	
021086	9	
031086	3	
041086	4	
051086	1	
061086	6	
071086	8	
081086	4	
091086	4	
101086	4	
111086	11	
121086	4	
131086	11	
141086	12	
151086	14	
161086	15	1
171086	10	
181086	10	
231086	2	
241086	5	
251086	2	
271086	6	
281086	17	
291086	12	
301086	10	
311086	15	
011186	1	
021186	1	
031186	10	
041186	14	
051186	1	
251186	7	
261186	5	
271186	1	
281186	3	
291186	1	
031286	4	
041286	4	
051286	2	
081286	4	
091286	2	
121286	1	
251286	1	
261286	2	
Total number of hours	273	1
Total number of days	44	1

Site : HARWELL, UNITED KINGDOM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1-31 OCT.1986 AND 22 JAN.- 31 MAR.1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	>160	>200	>240	>280	>320	>360	Maximum 1-h concentration
030387	9	2								82.
040387	12									67.
050387	15									67.
060387	17	8	5	3	1					213.
070387	24	22	16	11	7	6	4	3	2	385.
080387	24	24	24	24	24	24	24	24	22	691.
090387	24	24	24	24	24	23	23	13	7	476.
100387	24	20	10	10	10	10	10	10	9	606.
110387	22									78.
120387	17	1								82.
130387	15									76.
140387	16	2								94.
150387	5									61.
180387	5									69.
190387	11									74.
200387	1									51.
210387	1									46.
240387	5									74.
Total number of hours	918	204	86	73	66	63	61	50	40	
Total number of days	64	22	8	6	5	4	4	4	4	

Site : SCHOENEEN, AUSTRIA
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

No hourly values exceeding 40

Site : ST. DENIJS, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
010487	7			57.
030487	3			44.
040487	5			61.
060487	3			48.
130487	10			70.
140487	12			70.
150487	11			71.
160487	17	3	1	126.
170487	13			71.
180487	3			50.
210487	6			50.
220487	7			64.
230487	15			76.
240487	17	1		83.
250487	9			63.
260487	6	1		82.
270487	18	2		106.
280487	8			71.
290487	1			44.
070587	1			48.
080587	16	1		91.
090587	11	1		87.
100587	3			53.
110587	8	1		81.
130587	1			41.
150587	1			42.
160587	1			44.
170587	6			70.
180587	3			62.
190587	9			61.
210587	1			44.
220587	5			74.
230587	8			74.
240587	13			60.
250587	12	1		82.
260587	16			66.
270587	7			76.
310587	3			51.
010687	6			62.
030687	2			46.
120687	5			72.
150687	9			74.
160687	2			50.
170687	4			57.
180687	7			46.
200687	2			41.
300687	4			56.

Site : ST. DENIJS, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	Maximum 1-h concentration
020787	9			60.
030787	7			59.
040787	5			50.
060787	3			48.
070787	4	2		83.
090787	2			47.
100787	3			46.
140787	3			43.
210787	1			43.
280787	2			48.
300787	1			50.
310787	2			44.
150887	1			43.
160887	2			46.
170887	8	1		81.
180887	4			72.
240887	1			51.
310887	7			61.
010987	8			64.
020987	4			57.
040987	2			46.
050987	1			42.
070987	5			50.
090987	7			52.
180987	5			50.
190987	3			42.
210987	2			44.
230987	1			42.
250987	7			64.
260987	3			43.
270987	2			43.
Total number of hours	452	14	1	
Total number of days	78	10	1	

Site : OFFAGNE, BELGIUM
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	Maximum 1-h concentration
190587	5	61.
270587	2	51.
280587	1	43.
100787	1	43.
210887	1	43.
020987	1	55.
Total number of hours	11	
Total number of days	6	

Site : UTOE, FINLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
070487	1		55.
210487	1		47.
090587	1		70.
140587	1	1	100.
050687	1	1	100.
210687	1	1	100.
220687	2	2	100.
210787	1		48.
090887	1		50.
130887	1	1	100.
080987	1		41.
170987	2		45.
190987	1		61.
210987	1		66.
270987	5		63.
300987	4		49.
Total number of hours	25	6	
Total number of days	16	5	

Site : AHTARI, FINLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
020487	1	1	100.
030487	1		50.
040487	1		46.
050487	1		48.
120487	1		70.
140487	1		41.
090587	1	1	100.
160587	1		43.
080787	1		48.
200787	1	1	100.
210787	1		52.
300787	1	1	100.
050887	1	1	100.
220887	1		42.
150987	1	1	100.
Total number of hours	15	6	
Total number of days	15	6	

Site : EIBERGEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
010487	21		79.
020487	8		70.
040487	1		52.
050487	2		63.
060487	21	1	83.
070487	15		75.
080487	3		52.
090487	7		68.
100487	14		53.
110487	6		65.
130487	6		59.
140487	20		69.
150487	9	2	82.
160487	13		67.
170487	8		70.
180487	11	1	84.
190487	3		51.
210487	4		68.
220487	7		62.
230487	12	2	84.
240487	16	3	101.
250487	4		58.
260487	1		46.
280487	3		52.
290487	20	2	88.
300487	6		69.
020587	2		67.
030587	3		55.
080587	2		44.
090587	8	2	84.
100587	5		77.
140587	4		61.
150587	1		51.
170587	1		53.
180587	1		44.
230587	5		67.
240587	1		46.
010687	1		44.
020687	1		49.
030687	1		41.
060687	6	1	81.
110687	6		65.
120687	1		42.
130687	8		68.
190687	7		69.
210687	1		44.
290687	2		62.

Site : EIBERGEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
300687	3		51.
070787	10		62.
150787	5		54.
160787	7	1	83.
170787	1		43.
190787	1		41.
200787	2		45.
220787	2		42.
120887	9	3	93.
130887	4		50.
160887	1		47.
170887	4		46.
200887	10		74.
210887	10		63.
220887	7		59.
010987	7		57.
020987	2		43.
030987	7	1	88.
100987	3		41.
160987	13		55.
170987	5		76.
190987	3		54.
200987	4		64.
210987	16	4	103.
220987	4		63.
240987	4		52.
Total number of hours	452	23	
Total number of days	73	12	

Site : WITTEVEEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
010487	11	49.
060487	11	66.
070487	6	62.
080487	2	44.
100487	5	47.
110487	1	43.
140487	5	50.
150487	1	52.
230487	3	75.
240487	2	52.
290487	9	53.
090587	4	52.
030687	2	50.
060687	3	53.
160787	2	45.
130887	3	78.
210887	2	43.
220887	5	45.
010987	1	42.
030987	3	46.
100987	1	41.
160987	8	70.
170987	8	73.
210987	7	75.
220987	6	70.
240987	4	48.
Total number of hours	115	
Total number of days	26	

Site : PAYERNE, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 15 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	>160	>200	>240	Maximum 1-h concentration
150487	10						67.
160487	13						76.
170487	1						48.
180487	2						48.
210487	2						45.
220487	3						45.
230487	2						44.
240487	5						61.
250487	3						46.
270487	3						58.
280487	3						54.
290487	5						65.
300487	5						61.
010587	3						52.
040587	1						45.
190587	1						41.
030687	3						46.
100787	1						43.
130787	2						50.
140787	2						46.
150787	1						44.
050887	1						43.
070887	3						48.
120887	3						41.
140887	4						57.
160887	2						42.
170887	1						48.
150987	1						43.
160987	3	2	2	2	2	1	258.
170987	3						45.
180987	12						71.
190987	7						61.
210987	7						69.
220987	11						61.
230987	7						63.
300987	3						50.
Total number of hours	139	2	2	2	2	1	
Total number of days	36	1	1	1	1	1	

Site : SION, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 8 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
080487	7	74.
090487	8	51.
130487	1	42.
140487	3	51.
150487	5	60.
160487	9	69.
170487	7	65.
180487	4	51.
190487	1	42.
220487	3	51.
230487	7	69.
240487	7	69.
250487	7	60.
270487	3	60.
280487	8	74.
290487	5	69.
080587	5	47.
090587	5	60.
100587	1	42.
120587	2	60.
150587	6	56.
160587	1	42.
170587	1	42.
180587	3	56.
190587	2	42.
250587	5	65.
260587	4	69.
270587	1	56.
290587	2	46.
300587	2	42.
310587	2	42.
010687	1	42.
020687	5	60.
040687	1	60.
060687	1	42.
080687	1	42.
110687	1	47.
120687	3	47.
280687	1	42.
290687	1	42.
300687	2	51.
010787	2	60.
020787	3	47.
040787	1	42.
100787	1	42.
130787	2	56.

Site : SION, SWITZERLAND
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 8 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	Maximum 1-h concentration
140787	3	47.
170787	4	47.
210787	1	47.

160987	9	67.
170987	10	69.
180987	14	71.
190987	15	65.
200987	7	65.
210987	12	69.
220987	10	71.
230987	15	74.
240987	4	52.
250987	16	72.
290987	1	48.
300987	4	61.

Total
number 278
of hours

Total
number 61
of days

Site : TAENIKON, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 15 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration

150487	1	47.
160487	4	47.
230487	2	42.
240487	3	47.
270487	1	42.
280487	1	42.
290487	7	51.
300487	6	42.
010587	2	42.
230687	1	50.
300687	1	47.
010787	1	41.
060787	1	43.
020987	1	41.
170987	1	45.
180987	2	52.
190987	3	48.
220987	4	57.
260987	2	46.
300987	3	54.
Total number of hours	47	
Total number of days	20	

Site : HARWELL, UNITED KINGDOM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration		
	> 40	> 80	
020487	2		46.
030487	21	2	84.
040487	11		72.
050487	4		59.
060487	1		42.
070487	5		65.
130487	4		49.
140487	14		76.
150487	8		69.
160487	20	6	111.
170487	9		76.
200487	1		44.
210487	1		72.
220487	12		71.
230487	16	1	94.
240487	19	5	103.
180587	2		42.
190587	11		67.
200587	14		61.
210587	4		48.
220587	4		55.
240587	1		49.
250587	18		51.
260587	14		65.
270587	6	1	82.
280587	2		49.
020687	1		46.
040687	3		57.
050687	6		51.
090687	4		65.
120687	2		44.
130687	3		53.
150687	3		59.
030787	1		59.
140787	3		63.
040987	1		65.
160987	5		59.
Total number of hours	256	15	
Total number of days	37	5	

Site : SCHOENEGBEN, AUSTRIA
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 13 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	Maximum 1-h concentration
031187	4	50.
111187	5	48.
111287	2	43.
221287	3	45.
Total number of hours	14	
Total number of days	4	

Site : ST. DENIJS, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	>120	>160	Maximum 1-h concentration
051187	13				79.
061187	13				65.
091187	11				70.
101187	20				64.
111187	2				48.
181187	6				79.
231187	8				62.
241187	13				47.
261187	1				41.
281187	9				49.
301187	11				71.
011287	23				77.
021287	19				60.
031287	14				51.
041287	12				57.
051287	23				65.
061287	2				47.
071287	8				51.
081287	23				70.
091287	21	8			100.
101287	22	10	7	1	161.
111287	22				68.
121287	20	2			89.
131287	23	7			94.
141287	17				76.
151287	11				57.
161287	6				47.
171287	4				57.
191287	6				60.
211287	5				57.
221287	14				64.
231287	19	3			91.
241287	9				58.
251287	6				50.
271287	4				57.
281287	7	2			90.
291287	3				69.
301287	8				51.
311287	5				57.
Total number of hours	463	32	7	1	
Total number of days	39	6	1	1	

Site : OFFAGNE, BELGIUM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
051087	3	51.
061087	1	50.
191087	6	57.
201087	3	60.
241087	6	61.
301087	19	60.
311087	2	48.
061187	3	57.
071187	9	61.
081187	8	50.
101187	4	50.
111187	1	44.
241187	3	42.
071287	1	41.
131287	1	43.
141287	4	46.
241287	5	51.
Total number of hours	79	
Total number of days	17	

Site : UTOE, FINLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
291087	1		43.
301087	1		66.
131287	1		50.
241287	1	1	100.
271287	1	1	100.
291287	1	1	100.
Total number of hours	6	3	
Total number of days	6	3	

Site : AHTARI, FINLAND
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	Maximum 1-h concentration
021287	1	48.
091287	1	43.
141287	5	49.
161287	2	47.
171287	3	52.
281287	2	45.
291287	1	42.
311287	2	47.
Total number of hours	17	
Total number of days	8	

Site : EIBERGEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
041087	8	59.
051087	15	75.
061087	6	62.
071087	6	66.
081087	1	41.
091087	6	54.
101087	4	59.
121087	5	64.
131087	4	49.
141087	6	60.
151087	3	51.
161087	1	42.
181087	10	51.
191087	3	45.
231087	11	77.
251087	12	69.
261087	8	57.
271087	6	43.
281087	8	49.
291087	5	55.
301087	4	55.
311087	19	64.
011187	3	50.
021187	2	45.
031187	6	55.
041187	1	41.
081187	17	77.
091187	20	70.
101187	5	55.
111187	8	59.
131187	2	46.
141187	1	42.
171187	4	54.
181187	16	57.
191187	2	49.
221187	1	42.
231187	4	44.
291187	12	46.
301187	13	60.
011287	1	41.
031287	2	45.
041287	2	41.
071287	4	46.
081287	14	54.
091287	7	55.
101287	14	54.
111287	9	51.

Site : EIBERGEN, NETHERLANDS
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date > 40 Maximum 1-h
concentration

121287	6	48.
131287	7	63.
141287	1	41.
151287	16	51.
161287	9	46.
171287	5	54.
181287	6	55.
191287	11	52.
201287	2	47.
211287	1	41.
221287	3	47.
231287	13	52.
241287	10	53.
251287	3	43.
301287	3	55.
311287	2	47.

Total
number 419
of hours

Total
number 63
of days

Site : WITTEVEEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
011087	3		46.
051087	16		65.
061087	10		69.
091087	5		66.
101087	1		42.
121087	2		57.
131087	5		56.
141087	2		52.
151087	3		54.
181087	1		42.
201087	1		41.
211087	9		69.
221087	10		56.
231087	13		72.
241087	5		67.
251087	17		64.
261087	15		69.
271087	2		45.
281087	1		42.
291087	7		48.
301087	1		42.
311087	12		61.
011187	13		73.
021187	3		51.
031187	2		43.
051187	2		42.
071187	3		45.
081187	21		75.
091187	24	3	87.
101187	22		52.
111187	13		62.
131187	1		41.
141187	2		46.
181187	12		73.
191187	7		47.
231187	2		50.
241187	1		41.
261187	6		46.
271187	1		42.
291187	5		49.
301187	20		58.
011287	10		58.
031287	3		47.
041287	5		43.
051287	13		47.
071287	1		48.
081287	4		56.

Site : WITTEVEEN, NETHERLANDS
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	> 40	> 80
101287	14	62.
131287	7	58.
141287	3	44.
151287	20	61.
161287	17	53.
171287	13	57.
191287	3	52.
201287	3	61.
211287	7	48.
221287	1	41.
231287	5	49.
301287	2	42.
311287	3	50.
Total number of hours	435	3
Total number of days	60	1

Site : PAYERNE, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
011087	7	52.
021087	14	52.
031087	7	50.
041087	6	65.
051087	10	70.
091087	2	52.
101087	2	45.
171087	1	48.
181087	1	41.
191087	2	48.
201087	5	52.
211087	11	48.
221087	6	50.
231087	2	46.
251087	2	43.
261087	6	45.
281087	3	46.
291087	5	43.
301087	1	41.
311087	1	43.
031187	5	48.
041187	2	45.
051187	1	41.
061187	7	56.
071187	11	52.
081187	8	48.
091187	9	48.
101187	8	45.
111187	2	41.
181187	2	50.
191187	6	54.
241187	3	41.
251187	4	46.
261187	1	41.
271187	10	46.
281187	6	48.
041287	5	46.
051287	8	46.
061287	1	41.
071287	9	50.
091287	7	43.
101287	13	45.
111287	22	45.
121287	5	41.
131287	14	46.
141287	23	65.
151287	20	63.

Site : PAYERNE, SWITZERLAND
Parameter: NITROGEN DIOXIDE, UG/M3
Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 40	Maximum 1-h concentration
161287	21	56.
181287	14	57.
221287	7	52.
231287	8	45.
241287	2	41.
251287	4	41.
291287	5	43.
301287	9	45.
311287	4	41.

Total
number 380
of hours

Total
number 56
of days

Site : SION, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	> 40	> 80
011087	7	63.
021087	14	63.
031087	10	61.
041087	9	67.
051087	8	61.
061087	13	59.
071087	5	59.
081087	7	65.
091087	10	59.
101087	5	52.
111087	2	43.
121087	2	48.
131087	4	52.
141087	4	46.
151087	8	60.
161087	9	56.
171087	3	45.
181087	3	50.
191087	13	61.
201087	16	74.
211087	14	61.
221087	8	61.
231087	2	44.
241087	2	46.
251087	4	46.
261087	1	41.
271087	6	50.
281087	13	61.
291087	7	56.
301087	6	57.
311087	3	50.
011187	5	50.
021187	13	56.
031187	12	63.
041187	12	59.
051187	16	69.
061187	15	72.
071187	14	61.
081187	11	52.
091187	10	71.
111187	9	60.
121187	17	74.
131187	16	60.
141187	2	47.
151187	6	51.
161187	17	60.
171187	8	65.
181187	8	65.

Site : SION, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 31 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	> 80	Maximum 1-h concentration
191187	12		65.
231187	11		56.
241187	10		69.
251187	18		60.
261187	12		69.
271187	12		65.
281187	6		51.
291187	5		47.
301187	16		69.
011287	21		69.
021287	18	2	102.
031287	24	3	84.
041287	21	1	93.
051287	24		74.
061287	4		47.
071287	3		56.
091287	6		56.
101287	9		47.
111287	15		65.
121287	24		56.
131287	16		60.
141287	22	2	93.
151287	23	2	97.
161287	24		69.
171287	24		65.
181287	18		56.
191287	6		47.
211287	6		56.
221287	15		69.
231287	24		69.
241287	23		69.
251287	21		56.
261287	15		51.
271287	17		47.
281287	11		60.
291287	17		60.
301287	20		74.
311287	23		65.
Total number of hours	1005	10	
Total number of days	86	5	

Site : TAENIKON, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 18 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
021087	5	59.
031087	4	48.
041087	2	43.
051087	10	54.
141087	3	52.
151087	4	43.
171087	4	43.
181087	3	41.
201087	8	54.
211087	4	50.
221087	4	52.
231087	4	54.
241087	2	56.
251087	4	46.
291087	7	54.
301087	9	54.
311087	4	46.
011187	7	58.
021187	7	52.
031187	5	48.
041187	3	58.
061187	7	52.
071187	3	41.
081187	14	52.
091187	8	54.
101187	10	58.
121187	1	42.
151187	5	50.
171187	1	50.
181187	4	46.
191187	5	52.
201187	4	46.
231187	4	43.
241187	7	48.
251187	2	45.
261187	12	63.
271187	24	56.
281187	10	52.
291187	1	41.
301187	1	46.
041287	7	43.
051287	5	43.
061287	6	45.
071287	6	58.
091287	7	46.
101287	8	48.
111287	13	48.

Site : TAENIKON, SWITZERLAND
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 18 DECEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
121287	7	50.
141287	5	46.
151287	3	43.
161287	5	43.

Total
 number 298
 of hours

Total
 number 51
 of days

Site : HARWELL, UNITED KINGDOM
 Parameter: NITROGEN DIOXIDE, UG/M3
 Period : 1 OCTOBER - 9 OCTOBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 40	Maximum 1-h concentration
011087	2	51.
021087	6	51.

Total
 number 8
 of hours

Total
 number 2
 of days

APPENDIX C

Summary of PAN data

- 1) October 1986 - March 1987 page 179
- 2) April - September 1987 " 181
- 3) October - December 1987 " 185

The tables give the number of hours per day, and the number of days, with hourly concentrations exceeding given limits.

Site : CRETEIL, FRANCE
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	> 10	> 20
011086	1	
021086	6	1
051086	3	
071086	1	
091086	4	
111086	2	
010287	12	
Total number of hours	29	1
Total number of days	7	1

Site : DONON, FRANCE
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h concentration	
	> 10	> 20
130387	6	12.
Total number of hours	6	
Total number of days	1	

9 gr.
 17 u
 27 u
 51 u

Site : DELFT, NETHERLANDS
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 OCTOBER 1986 - 31 MARCH 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 10	> 20	> 30	> 40	Maximum 1-h concentration
011086	8	4	2	1	45.
021086	15	1			23.
051086	5	3	1		38.
091086	4				13.
101086	1				12.
181086	8	6			28.
301186	7				12.
140187	4				12.
150187	8				12.
160187	21				12.
170187	24				13.
180187	16				17.
190187	21				16.
200187	10				12.
010287	12				15.
020287	16				18.
030287	7				13.
250287	7				14.
260287	12	8	4	1	40.
040387	6				13.
050387	15				17.
060387	17	5			24.
070387	24	9	1		32.
080387	24	4			22.
090387	24	14			30.
100387	24				19.
110387	24	10			25.
120387	24	21	2		30.
130387	24	17	7		38.
140387	24	14			27.
150387	11	7			27.
220387	1				12.
310387	7				13.
Total number of hours	455	123	17	2	
Total number of days	33	14	6	2	

Site : CRETEIL, FRANCE
Parameter: PEROXYACETYL NITRATE, UG/M3
Period : 1 APRIL - 24 JUNE 1987

Number of hours per day with 1-h concentration
exceeding given limits

Date	> 10	Maximum 1-h concentration
140487	5	14.
160487	14	14.
170487	11	14.
230487	2	11.
270487	9	13.
280487	2	11.
090587	2	11.
100587	5	14.
120687	1	12.
Total number of hours	51	
Total number of days	9	

Site : DONON, FRANCE
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 APRIL - 30 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	Maximum 1-h		concentration
	> 10	> 20	
020487	1		10.
150487	5		13.
160487	6		12.
230487	4		12.
240487	13		14.
250487	1		11.
270487	1		10.
290487	1		11.
090587	2		10.
290687	3		12.
010787	3		14.
020787	4		13.
030787	1		11.
040787	2		13.
060787	8		16.
110787	1		11.
140787	5		11.
170887	1		11.
210887	4		15.
310887	1		10.
190987	1	1	25.
Total number of hours	68	1	
Total number of days	21	1	

Site : DELFT, NETHERLANDS
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 APRIL - 21 SEPTEMBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

Date	> 10	> 20	> 30	Maximum 1-h concentration
020487	6			12.
030487	3			12.
150487	3			13.
160487	3			12.
170487	9	3		22.
180487	11	2		21.
240487	4			12.
250487	7	1		21.
260487	4			13.
290487	13			17.
090587	12			18.
100587	3			12.
020687	3			13.
120687	5			15.
170687	4			16.
180687	6			16.
250687	2			12.
290687	4			16.
060787	11	1		22.
070787	18			20.
100787	9	1		20.
130787	1			10.
140787	3			11.
150787	3			13.
160787	1			12.
220787	1			12.
230787	1			10.
110887	5			12.
120887	3			18.
130887	7			14.
170887	12			19.
180887	11	5	1	33.
190887	1			11.
200887	6			13.
210887	14	3		24.
220887	1			12.
010987	10	1	1	33.
030987	4			13.
050987	1			10.
160987	2			16.
170987	5			16.
Total number of hours	232	17	2	
Total number of days	41	8	2	

Site : DONON, FRANCE
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 - 12 OCTOBER 1987

Number of hours per day with 1-h concentration
 exceeding given limits

No hourly values exceeding 10

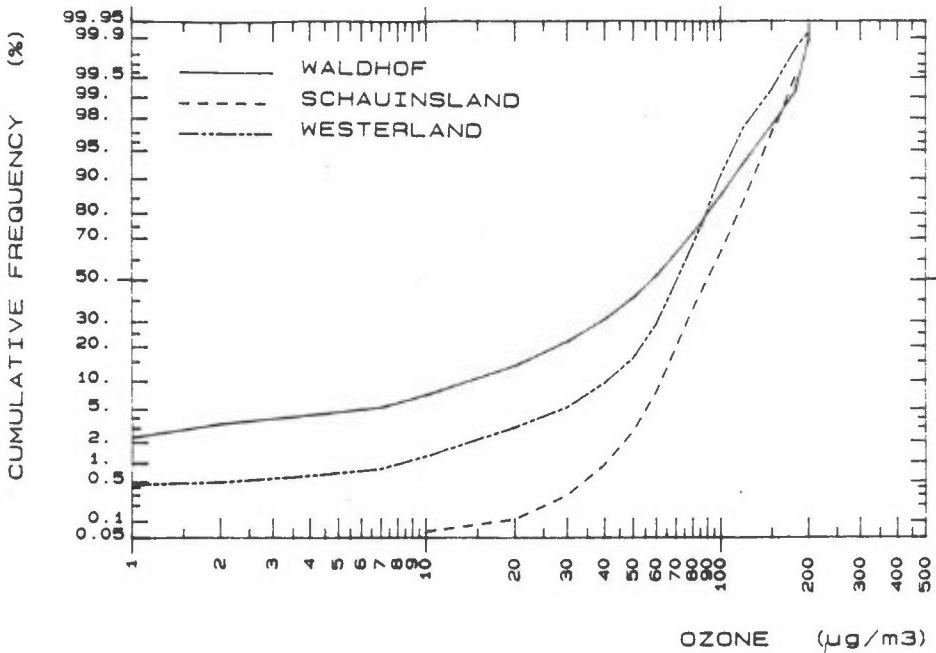
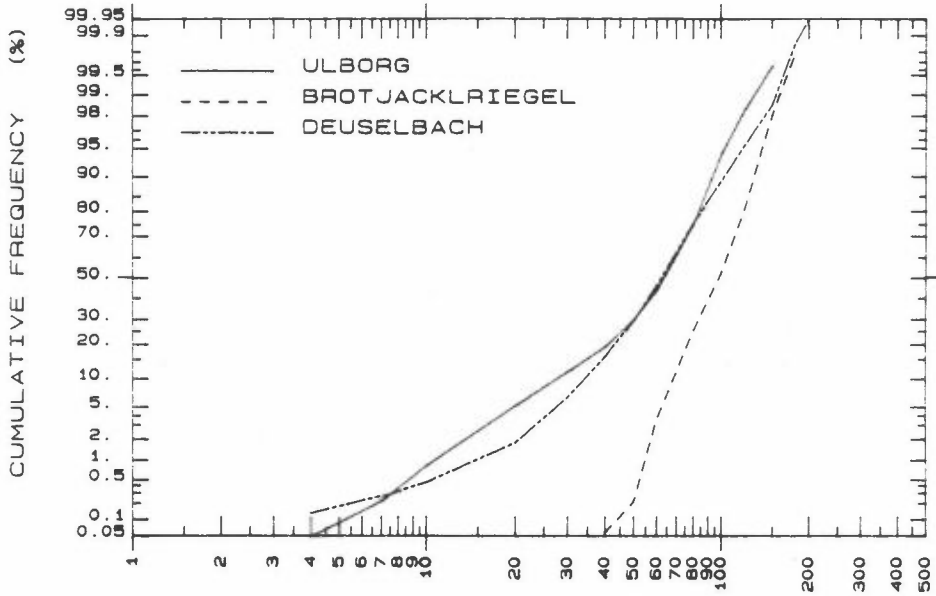
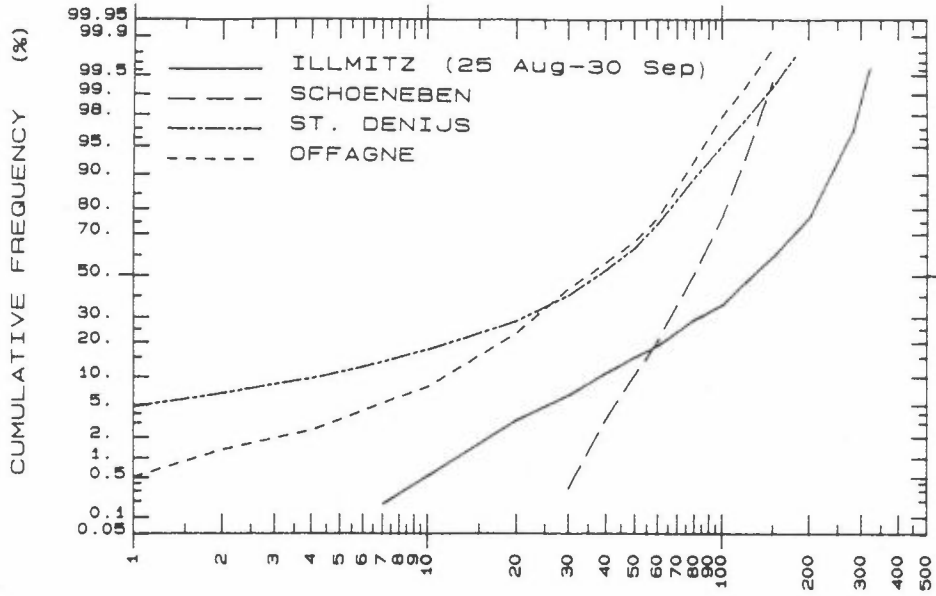
Site : DELFT, NETHERLANDS
 Parameter: PEROXYACETYL NITRATE, UG/M3
 Period : 1 - 5 OCTOBER 1987

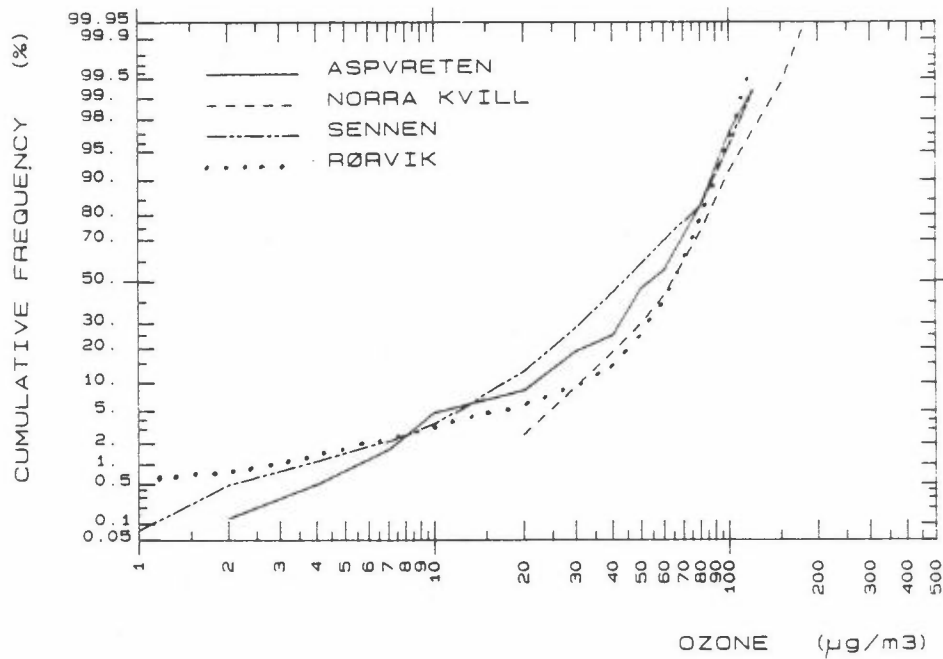
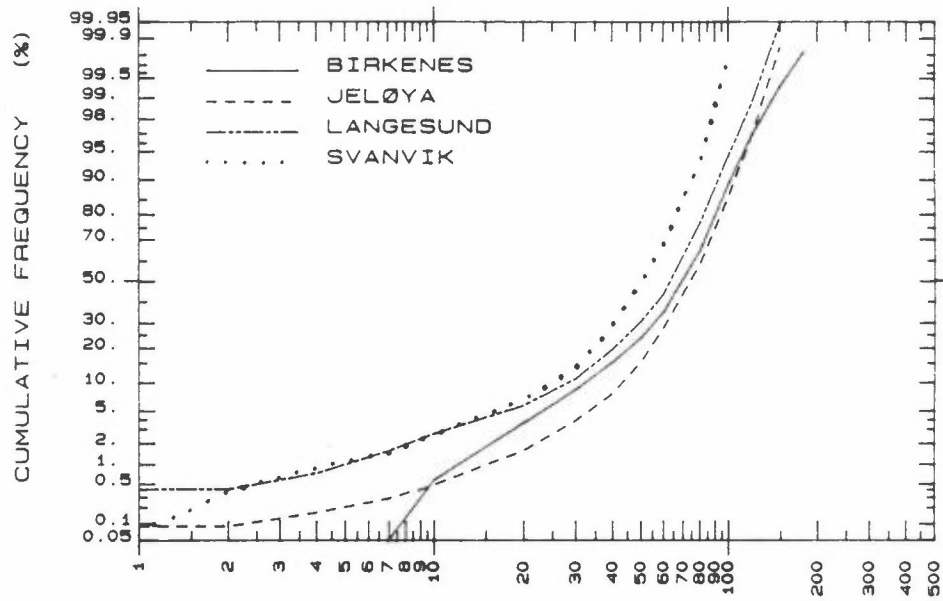
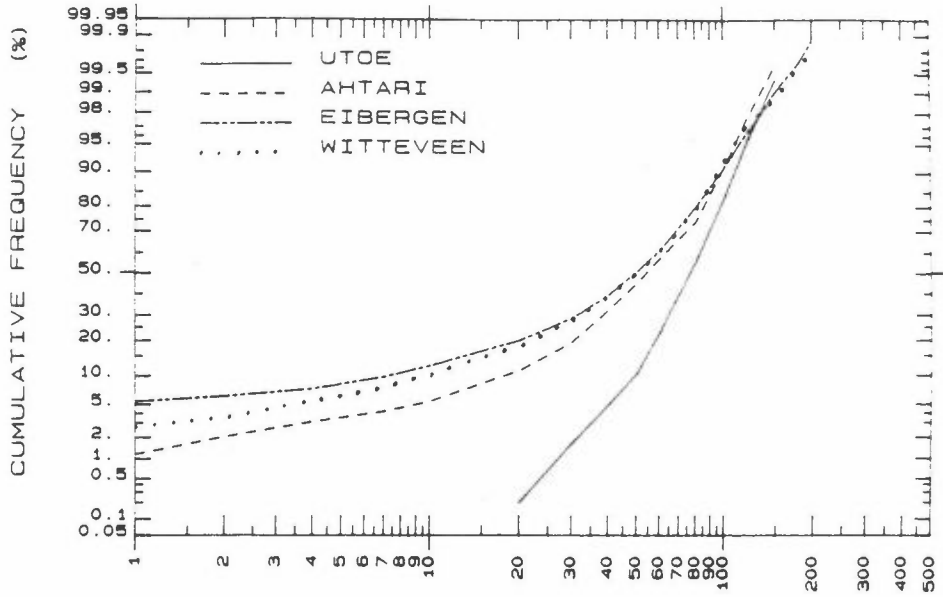
Number of hours per day with 1-h concentration
 exceeding given limits

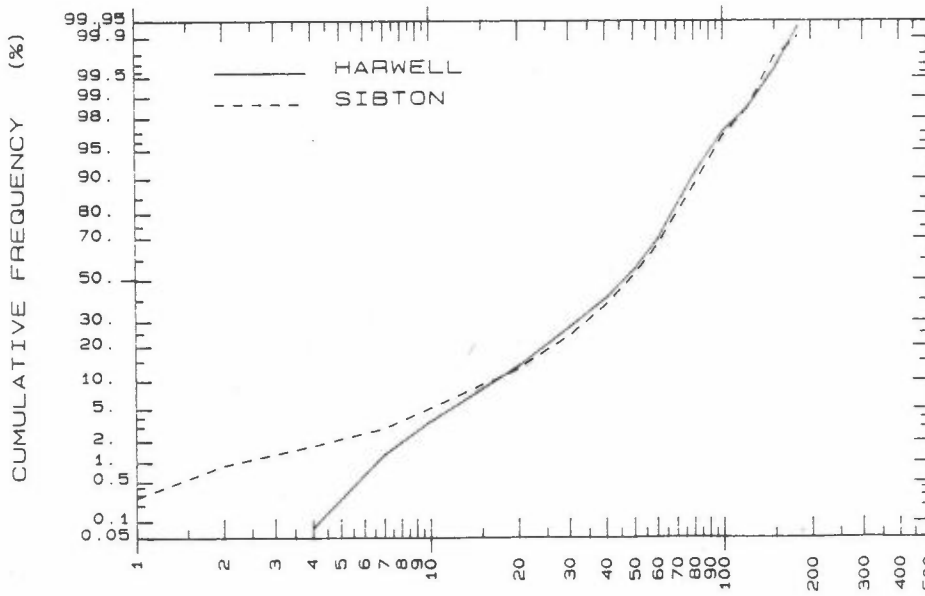
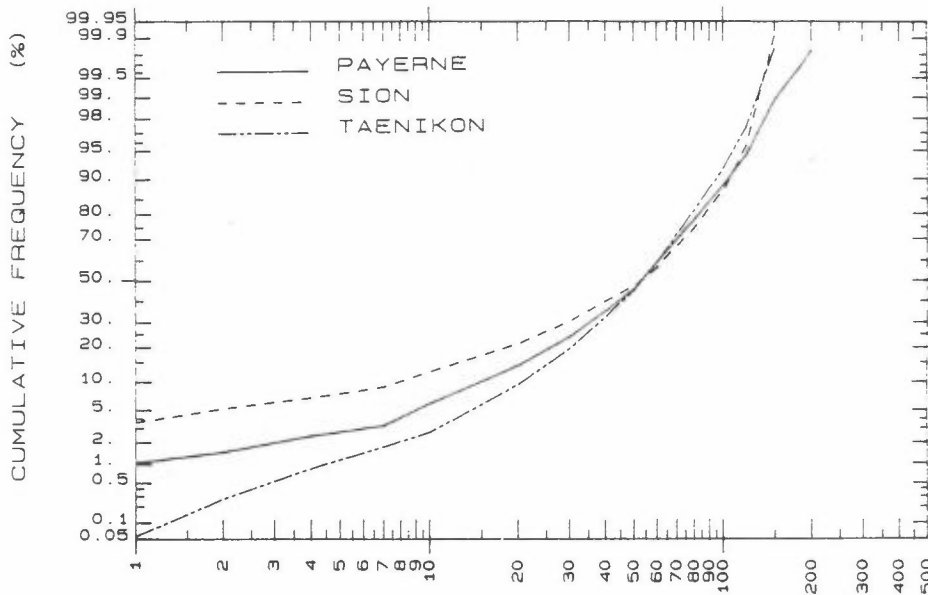
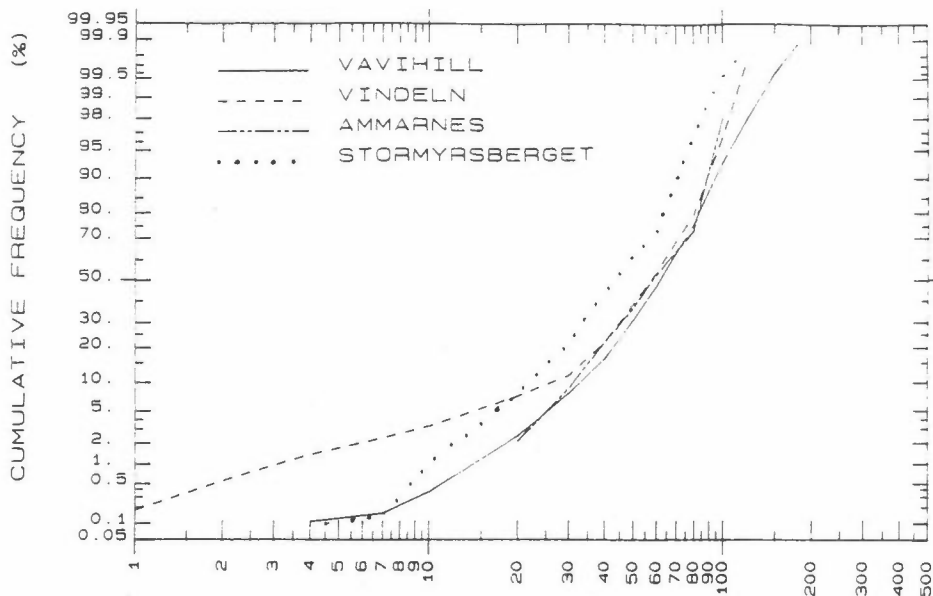
Date	> 10	> 20	Maximum 1-h concentration
031087	5		12.
041087	8	2	21.
Total number of hours	13	2	
Total number of days	2	1	

APPENDIX D

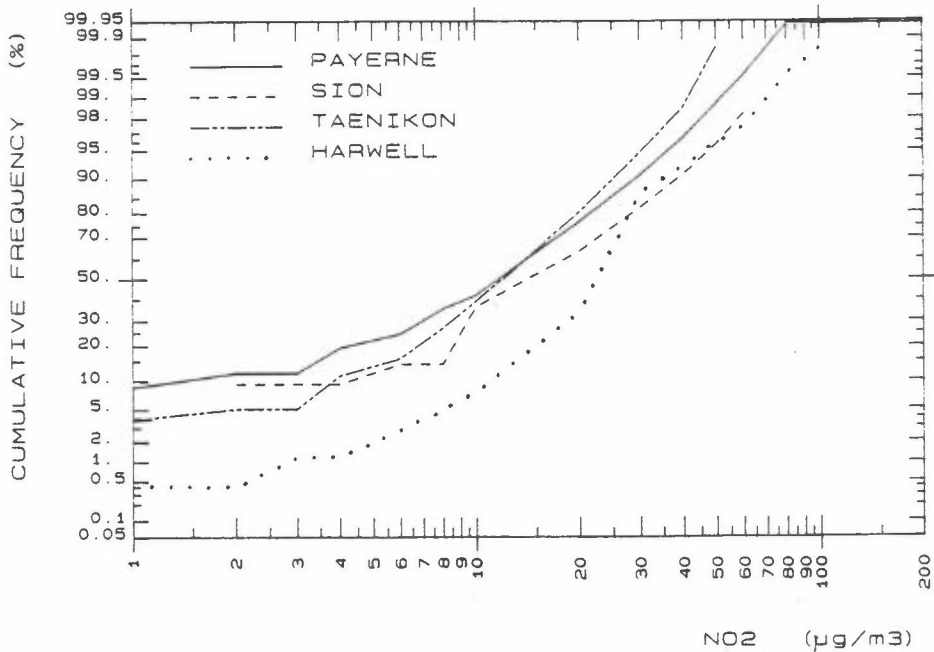
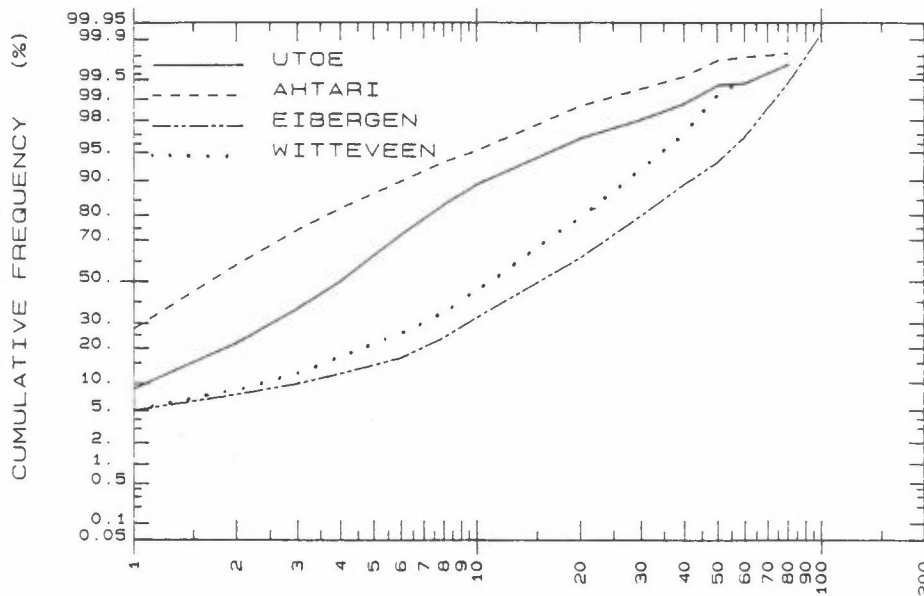
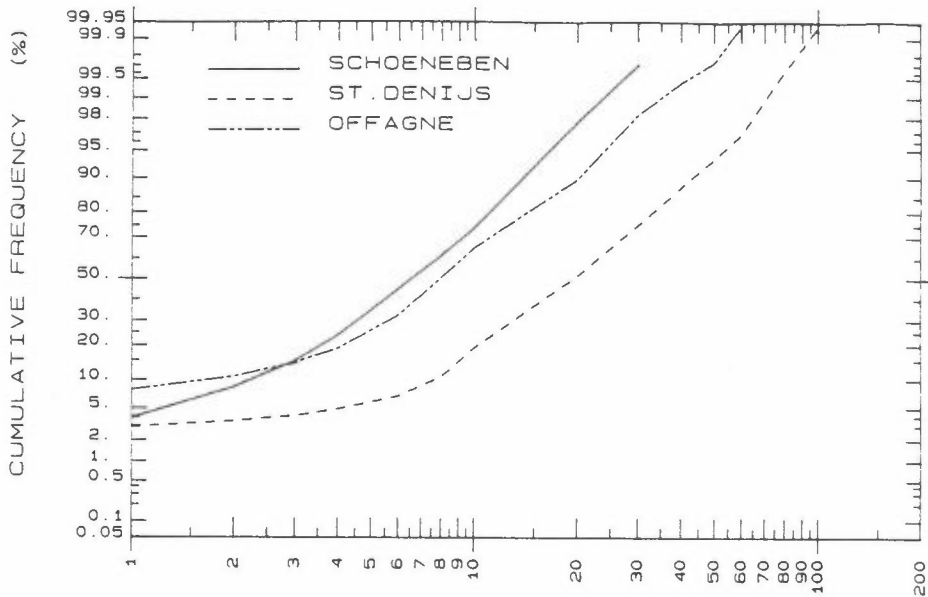
Cumulative frequency distributions of ozone, nitrogen
dioxide and peroxyacetyl nitrate concentrations,
April - September 1987

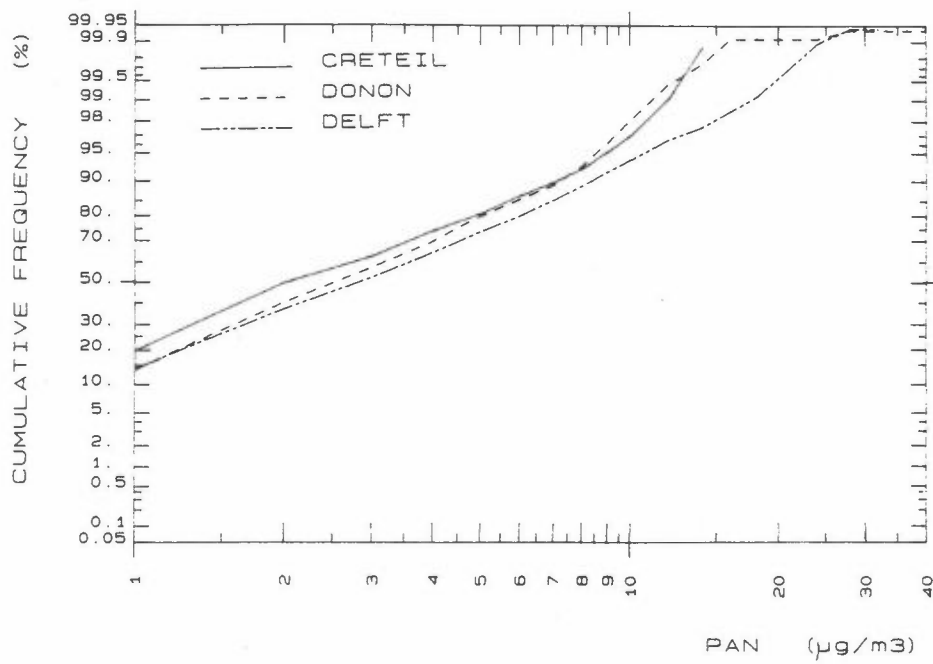






OZONE ($\mu\text{g}/\text{m}^3$)

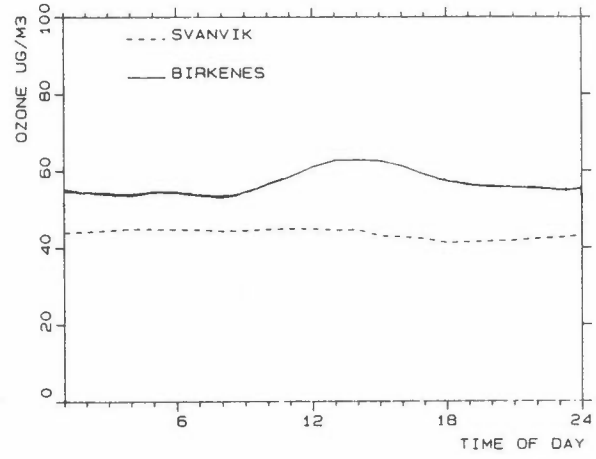
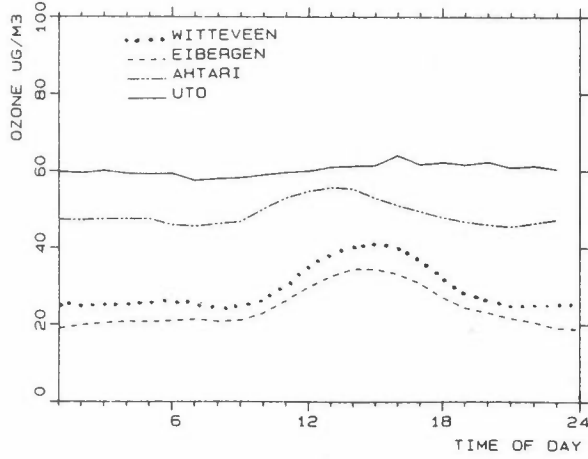
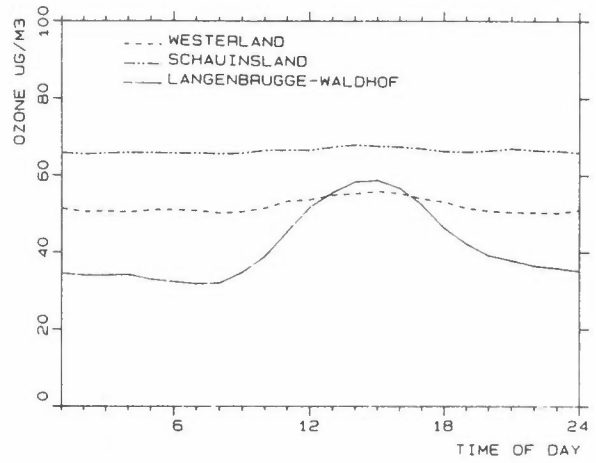
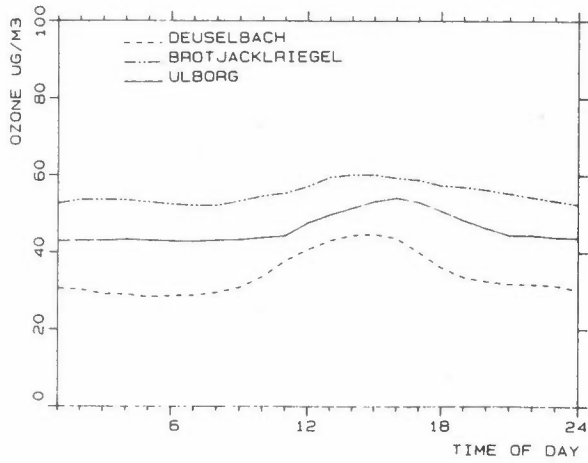
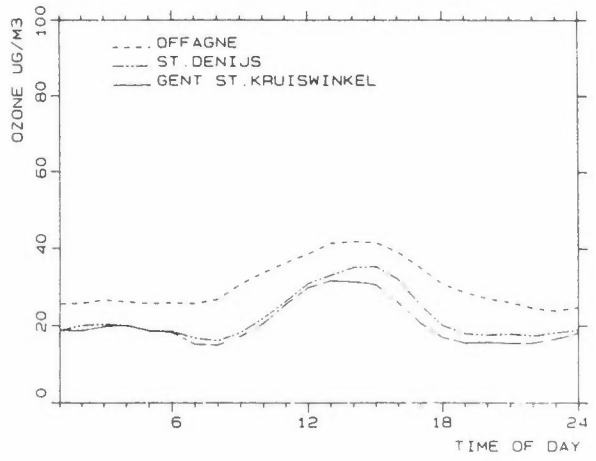
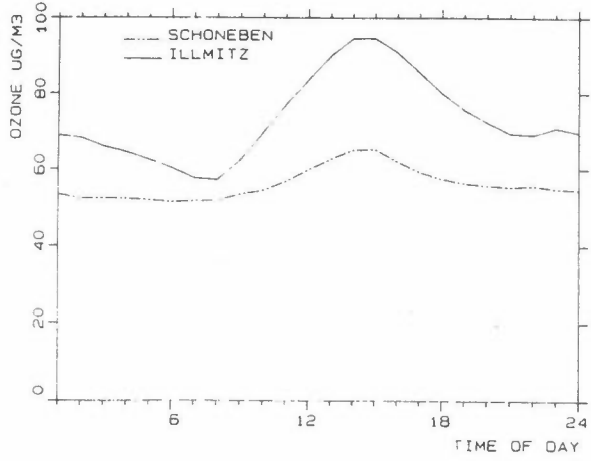


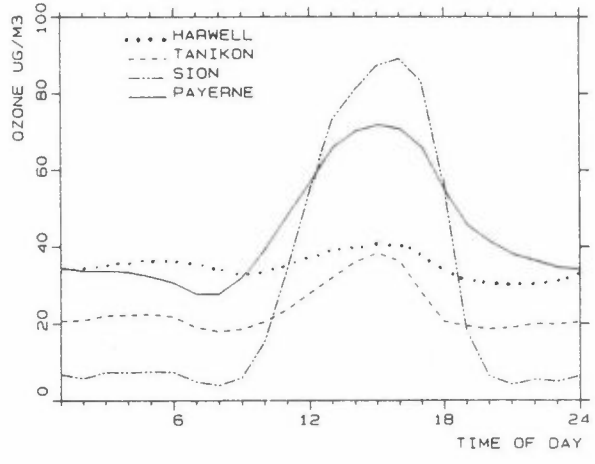
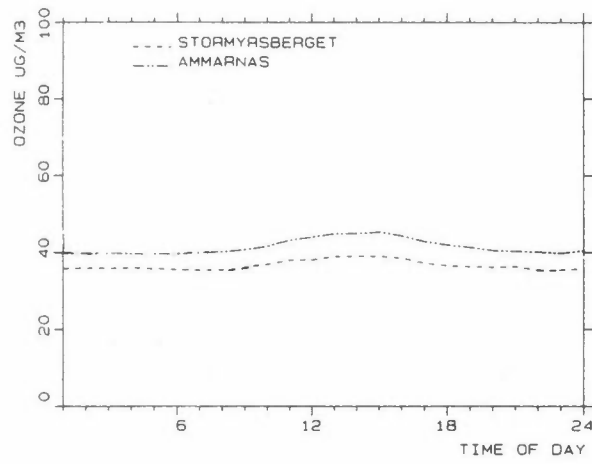
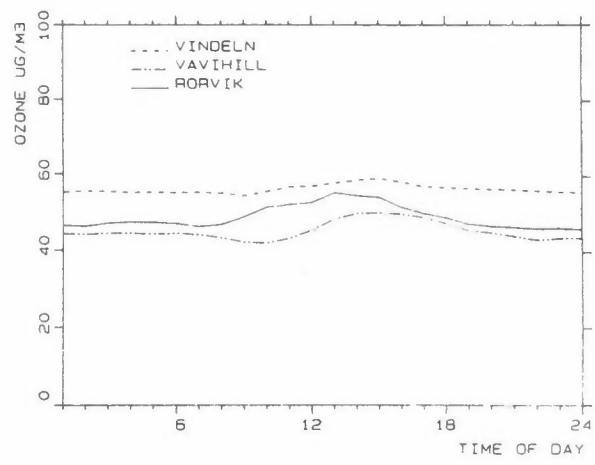
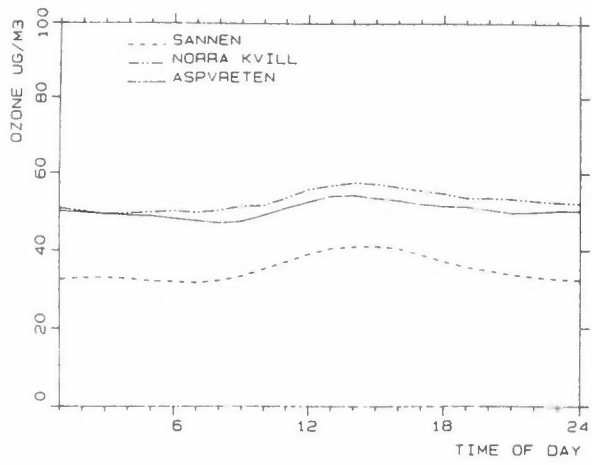


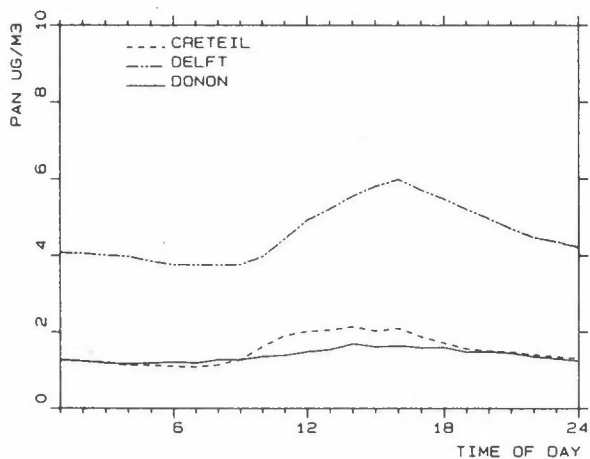
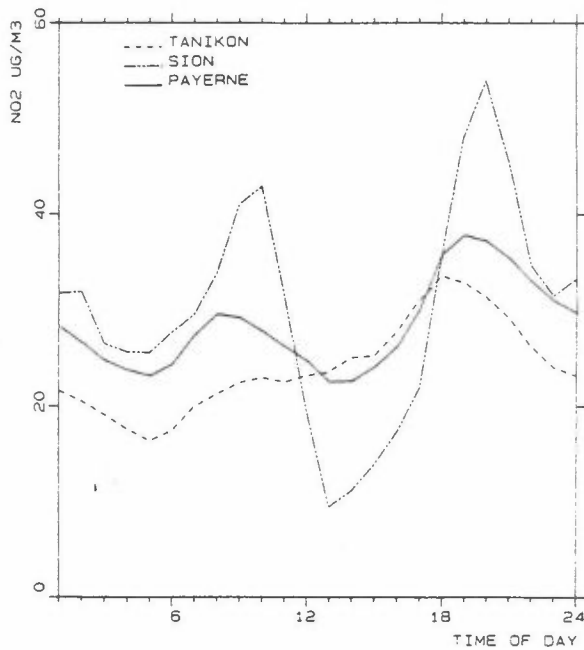
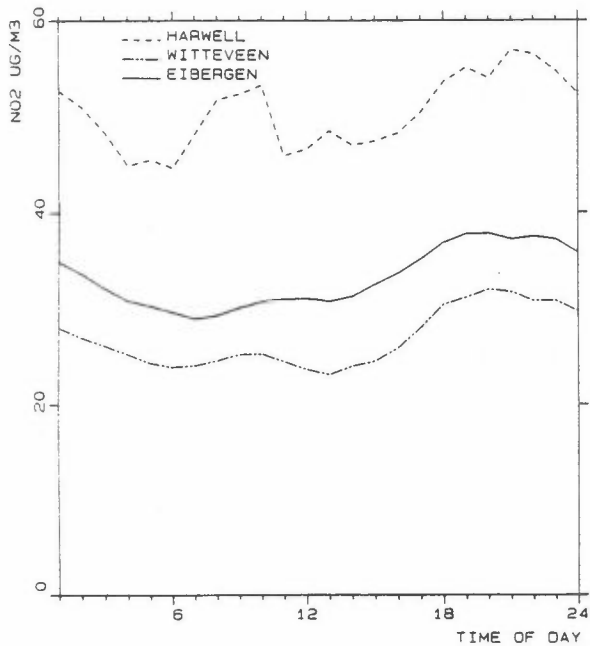
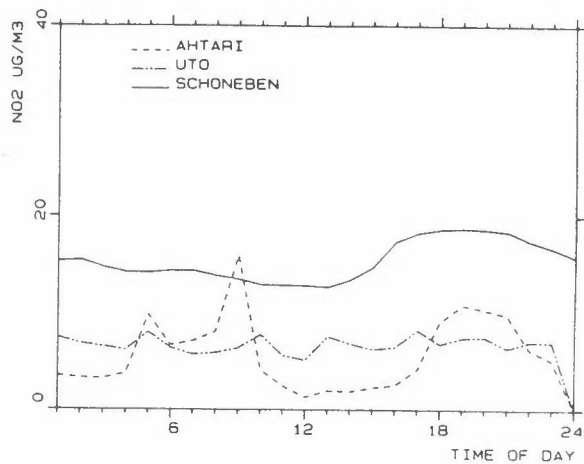
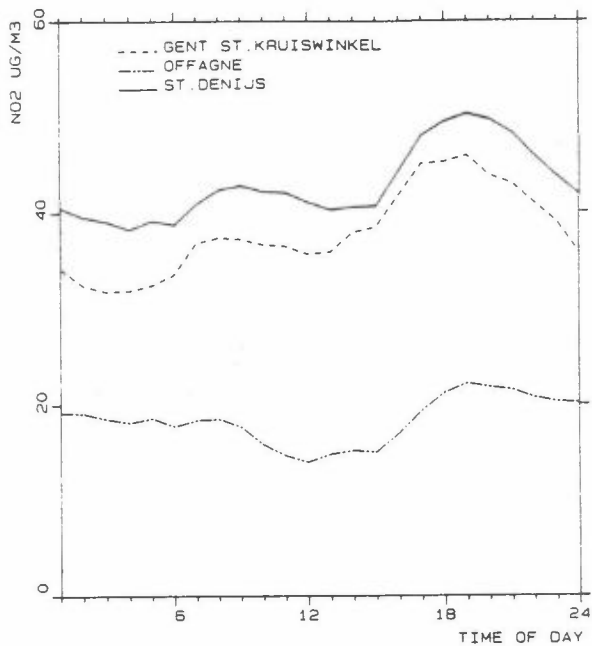
APPENDIX E

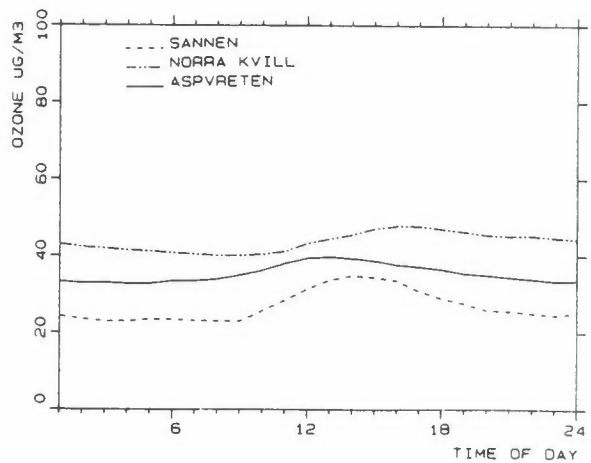
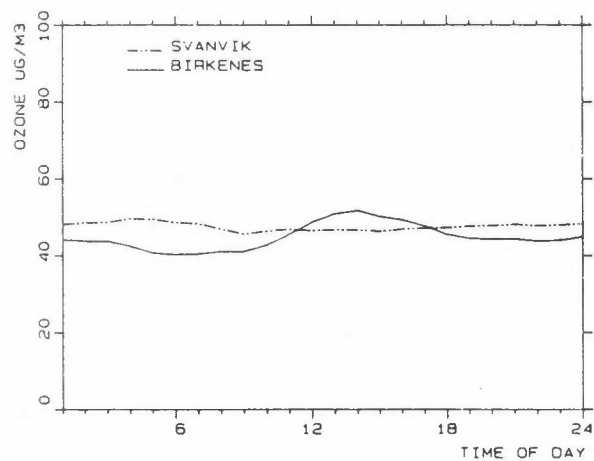
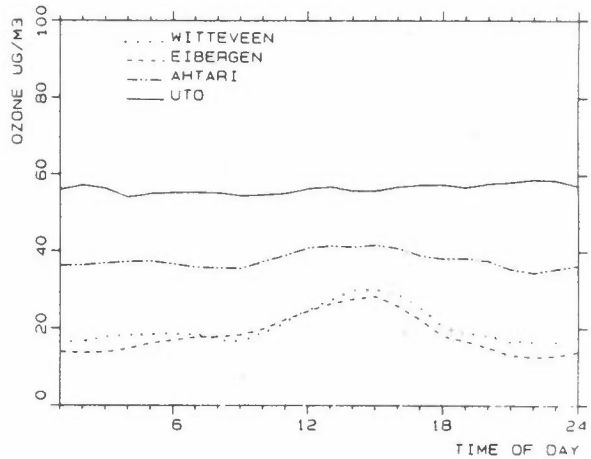
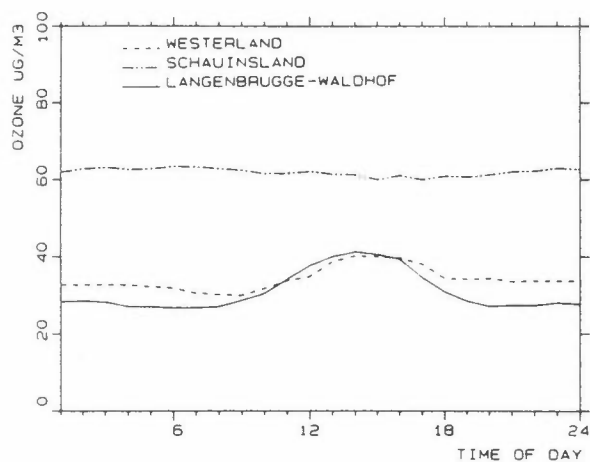
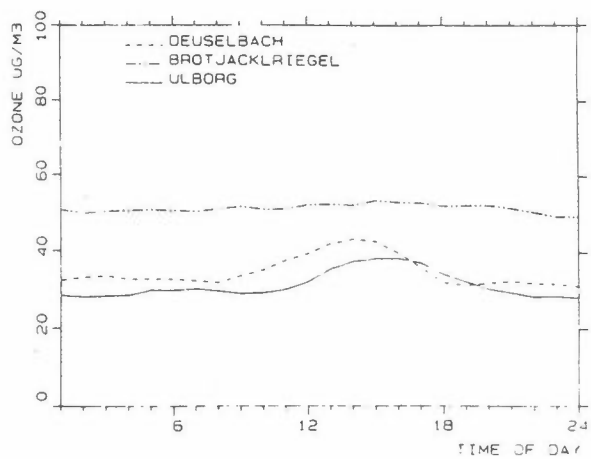
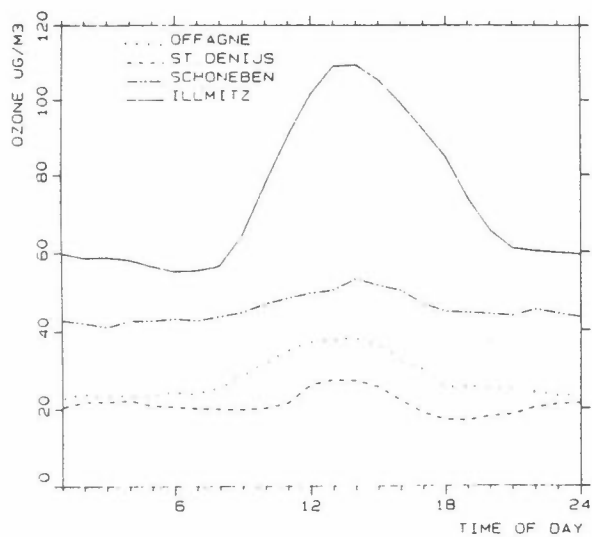
Mean diurnal concentration distribution for ozone,
nitrogen dioxide and PAN

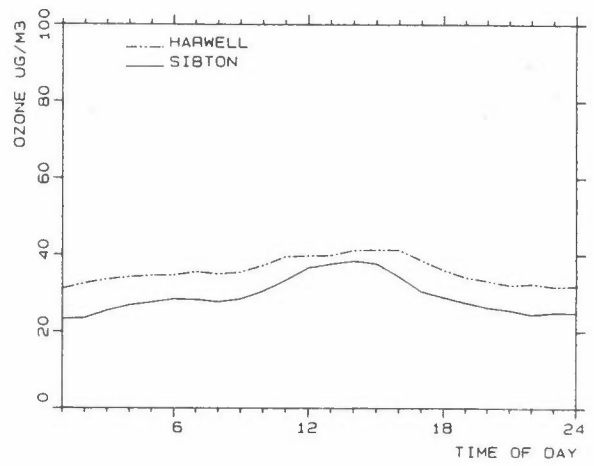
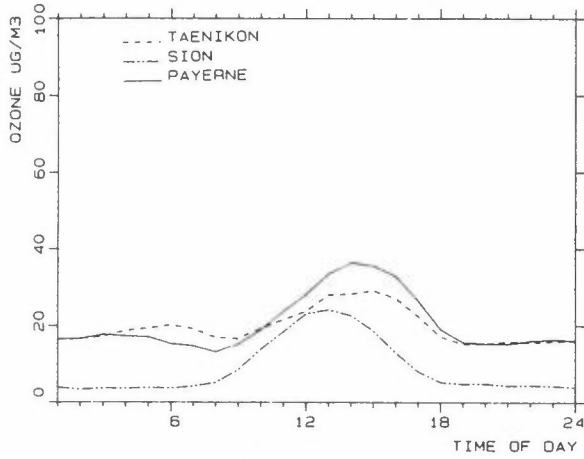
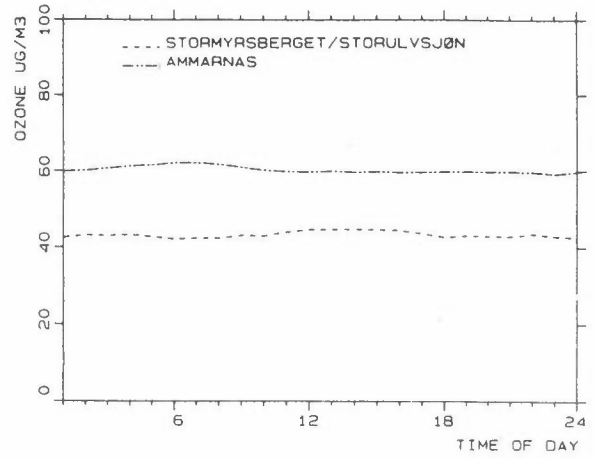
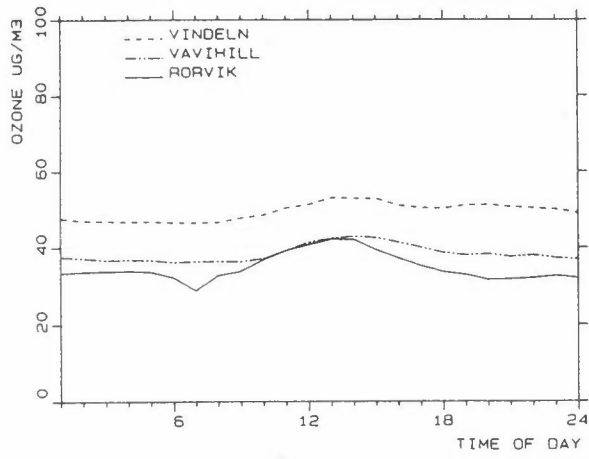
- 1) October 1986 - March 1987 page 197
and
- 2) October - December 1987 page 201

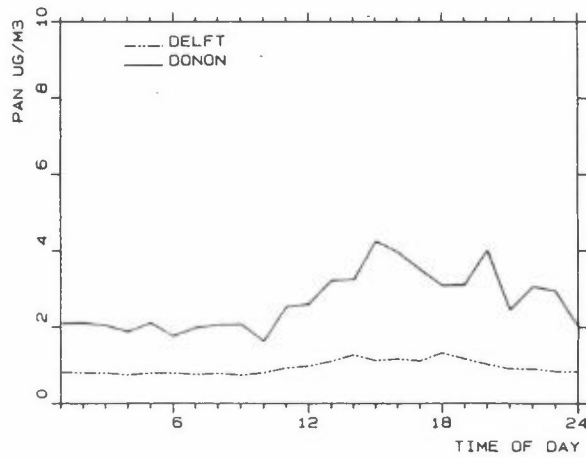
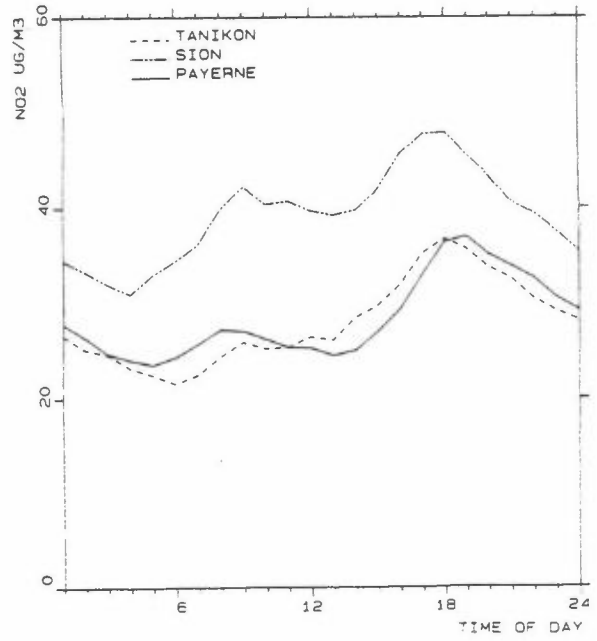
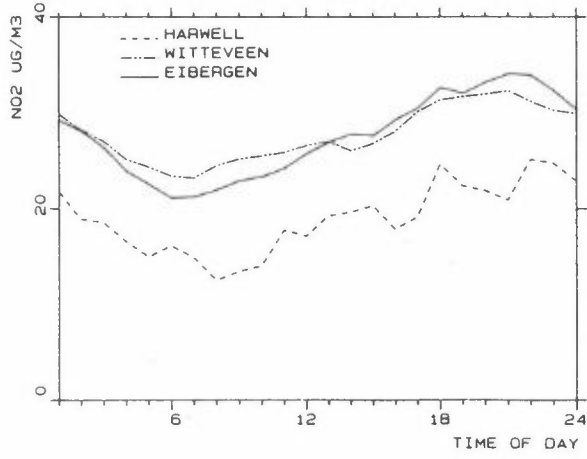
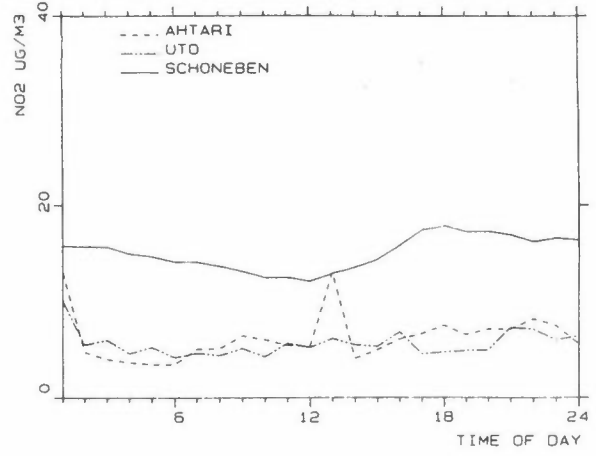
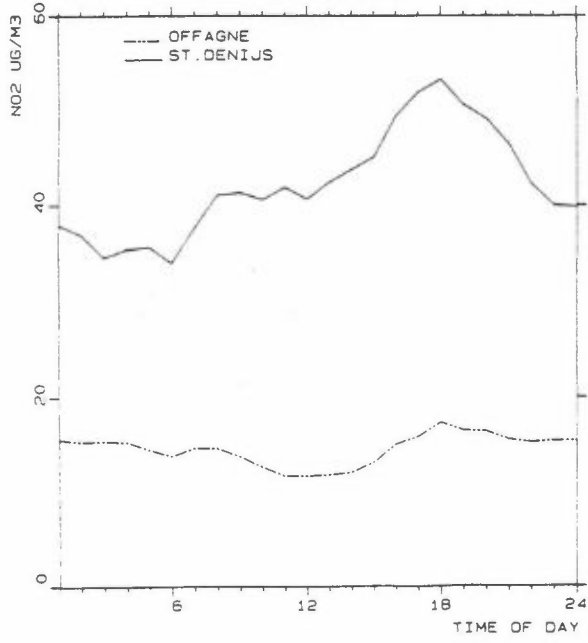












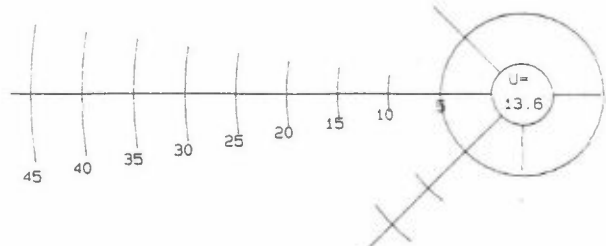
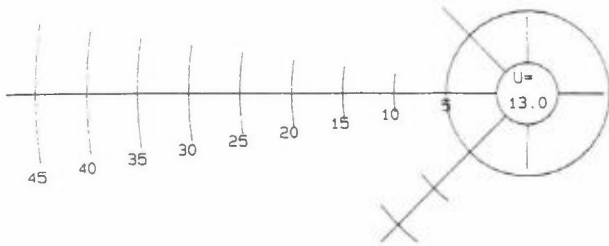
APPENDIX F

Back trajectory sector distributions (unit: per cent)
April - September 1987

- 1) Ozone concentration limit: $120 \mu\text{g}/\text{m}^3$, $150 \mu\text{g}/\text{m}^3$, $240 \mu\text{g}/\text{m}^3$
and all days page 207
- 2) NO_2 concentration limits: $40 \mu\text{g}/\text{m}^3$, $80 \mu\text{g}/\text{m}^3$ and all days " 221
- 3) PAN concentration limit: $10 \mu\text{g}/\text{m}^3$ and all days " 227

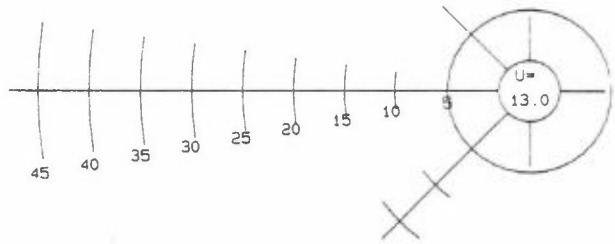
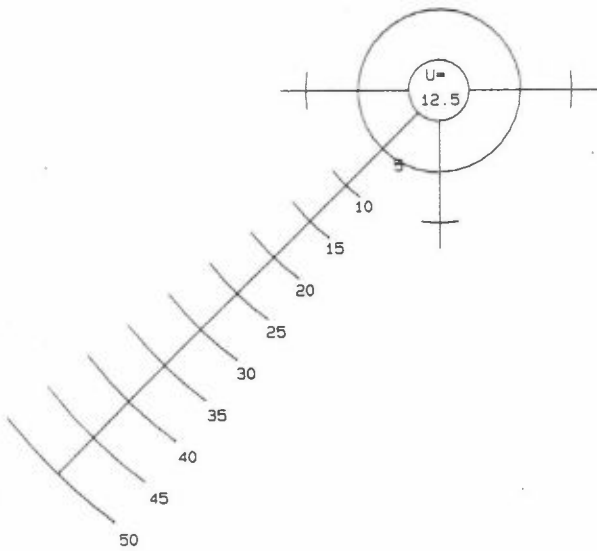
ILLMITZ, AUSTRIA
 OZONE > 120. ug/M3 (23)

ILLMITZ, AUSTRIA
 OZONE > 150. ug/M3 (22)

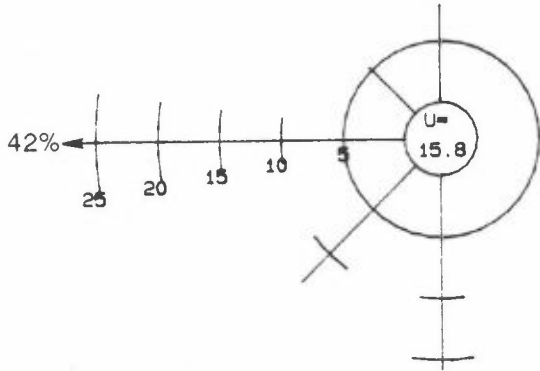


ILLMITZ, AUSTRIA
 OZONE > 240. ug/M3 (8)

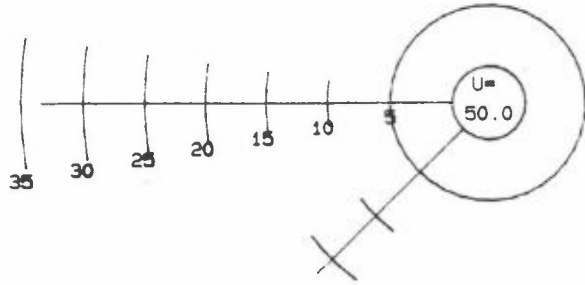
ILLMITZ, AUSTRIA
 ALL DAYS (23)



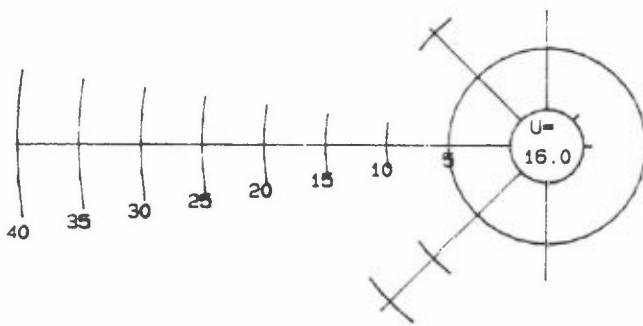
SCHONEBEN, AUSTRIA
OZONE > 120. ug/M3 (38)



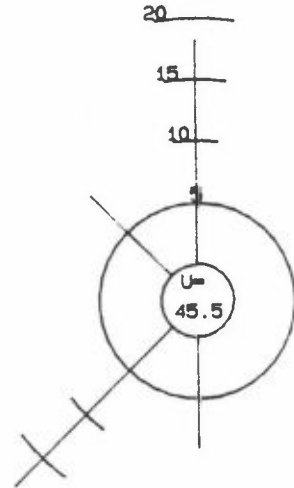
SCHONEBEN, AUSTRIA
OZONE > 150. ug/M3 (6)



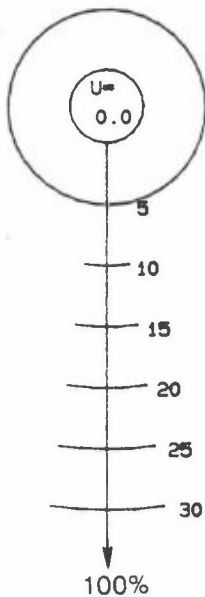
SCHONEBEN, AUSTRIA
ALL DAYS (162)



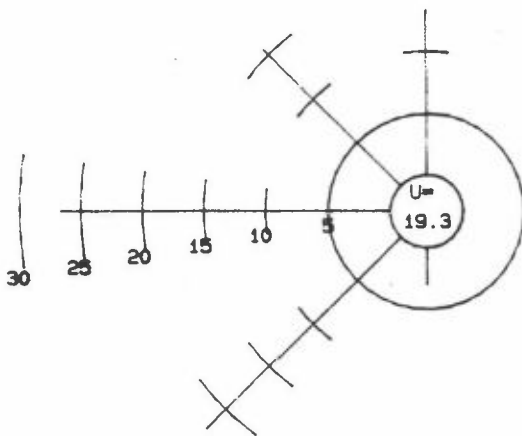
ST.DENIJS, BELGIUM
OZONE > 120. ug/M3 (11)



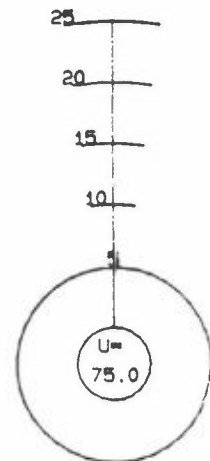
ST.DENIJS, BELGIUM
OZONE > 150. ug/M3 (1)



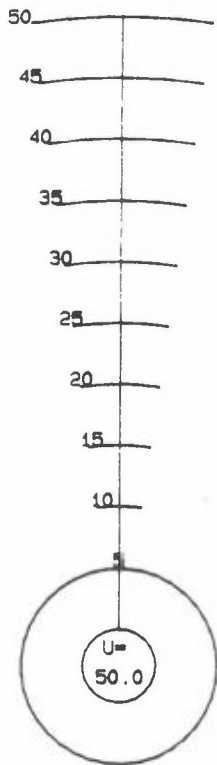
ST.DENIJS, BELGIUM
ALL DAYS (135)



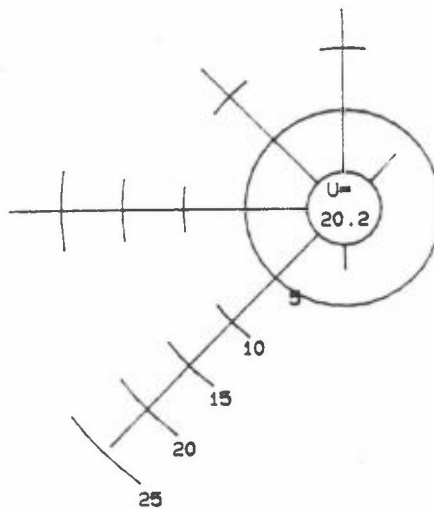
OFFAGNE, BELGIUM
OZONE > 120. ug/M3 (4)



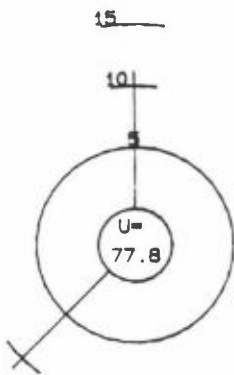
OFFFAGNE, BELGIUM
 OZONE > 150. ug/M3 (2)



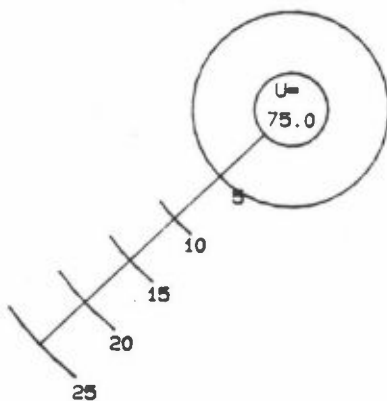
OFFFAGNE, BELGIUM
 ALL DAYS (99)



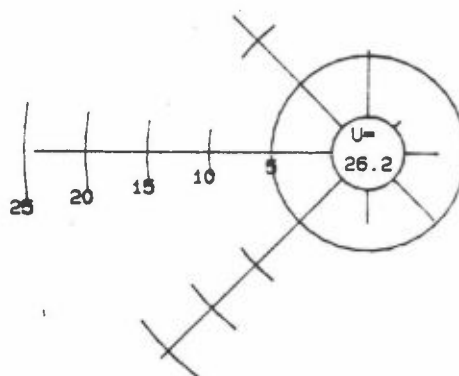
ULBORG, DENMARK
 OZONE > 120. ug/M3 (9)



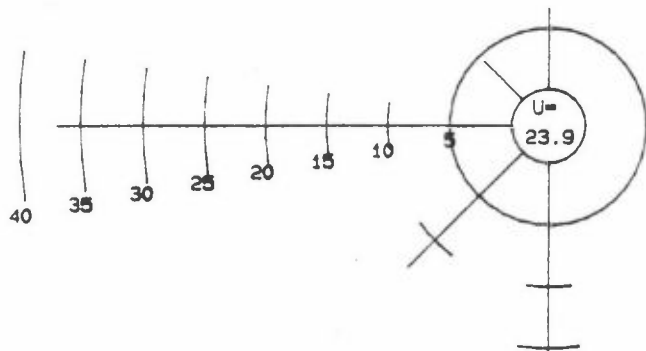
ULBORG, DENMARK
 OZONE > 150. ug/M3 (4)



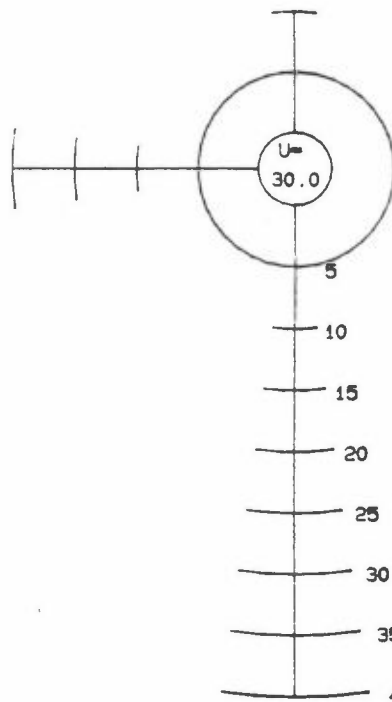
ULBORG, DENMARK
 ALL DAYS (149)



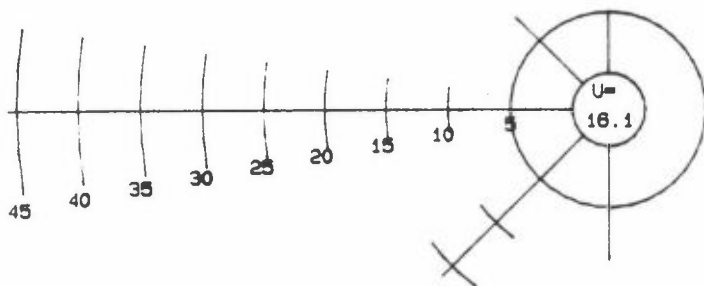
BROTJACKLRIEGEL, FED.REP. OF GERMANY
OZONE > 120. ug/M3 (46)



BROTJACKLRIEGEL, FED.REP. OF GERMANY
OZONE > 150. ug/M3 (10)



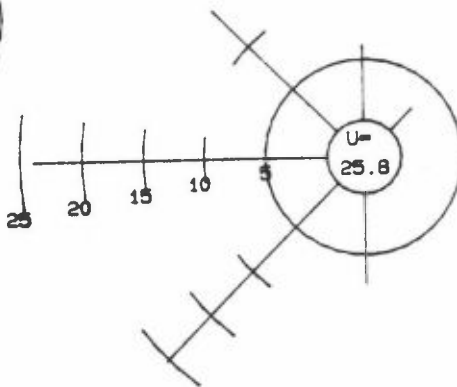
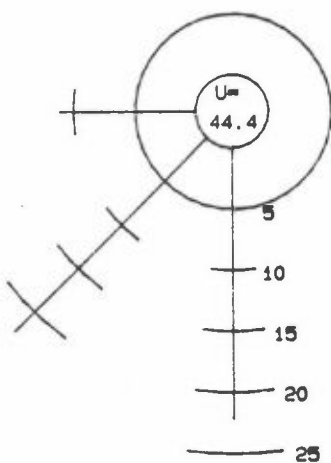
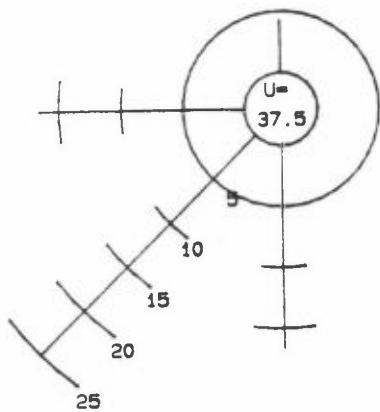
BROTJACKLRIEGEL, FED.REP. OF GERMANY
ALL DAYS (118)



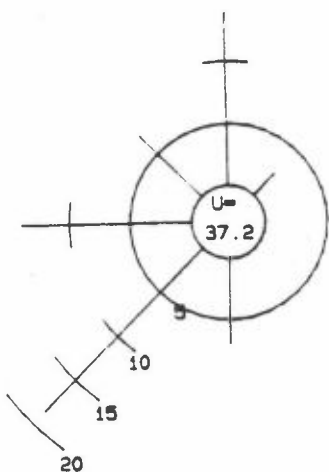
DEUSELBACH, FED.REP. OF GERMANY
OZONE > 150. ug/M3 (9)

DEUSELBACH, FED.REP. OF GERMANY
ALL DAYS (163)

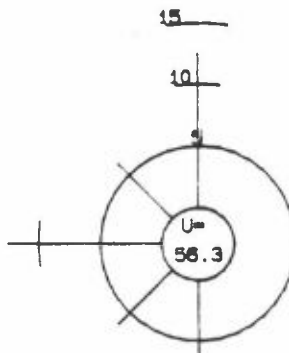
DEUSELBACH, FED.REP. OF GERMANY
OZONE > 120. ug/M3 (24)



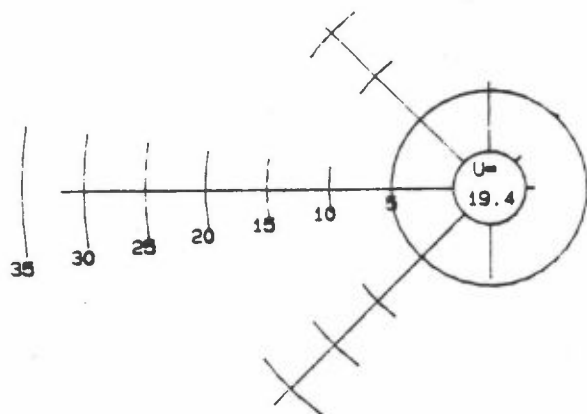
LANGENBRUGGE-WALDHOF, FED.REP. OF GERMANY
OZONE > 120. ug/M3 (43)



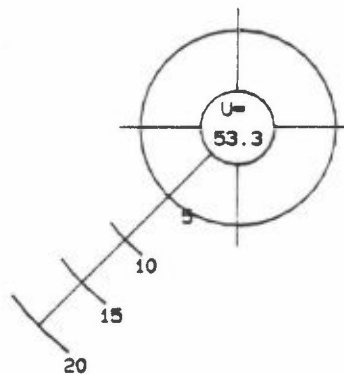
LANGENBRUGGE-WALDHOF, FED.REP. OF GERMANY
OZONE > 150. ug/M3 (18)



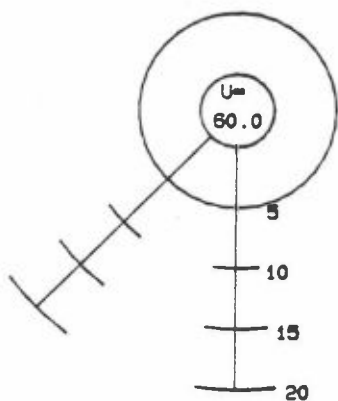
LANGENBRUGGE-WALDHOF, FED.REP. OF GERMANY
ALL DAYS (160)



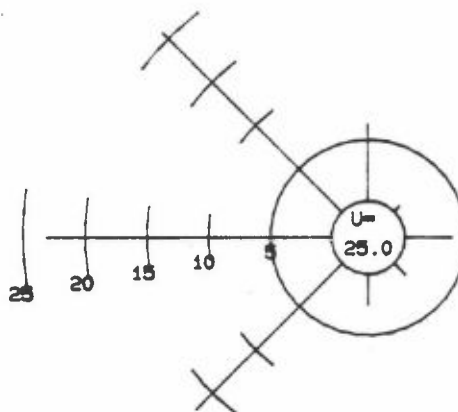
WESTERLAND, FED.REP. OF GERMANY
OZONE > 120. ug/M3 (15)



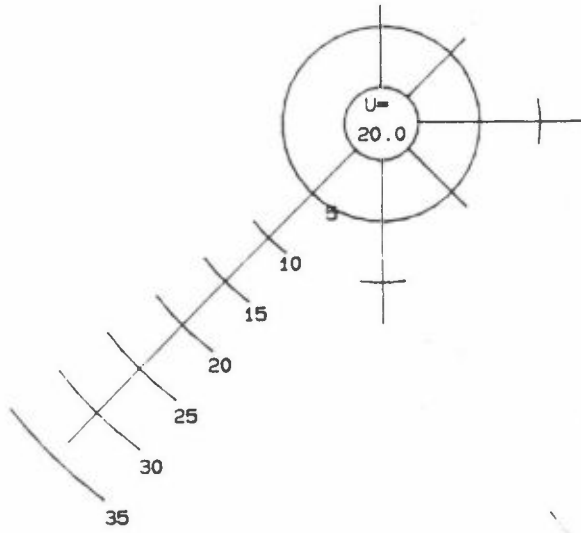
WESTERLAND, FED.REP. OF GERMANY
OZONE > 150. ug/M3 (5)



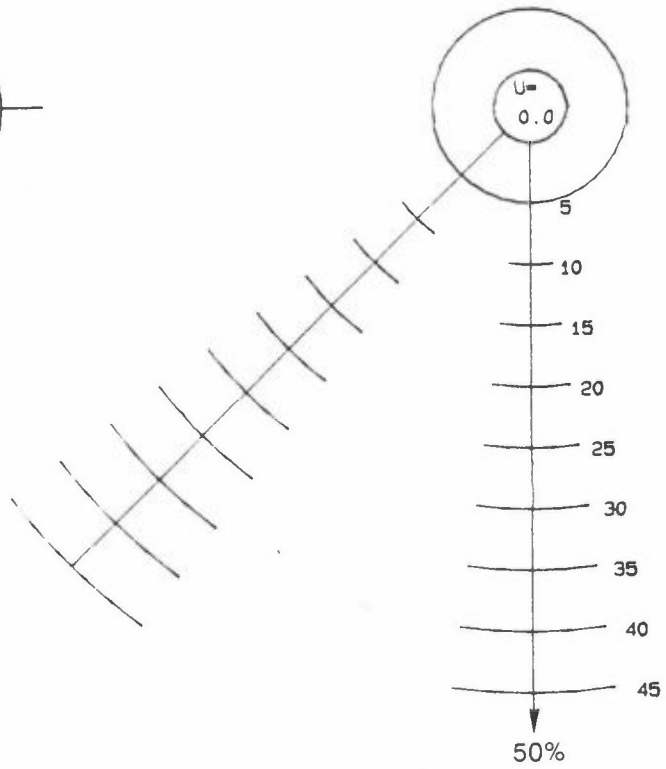
WESTERLAND, FED.REP. OF GERMANY
ALL DAYS (160)



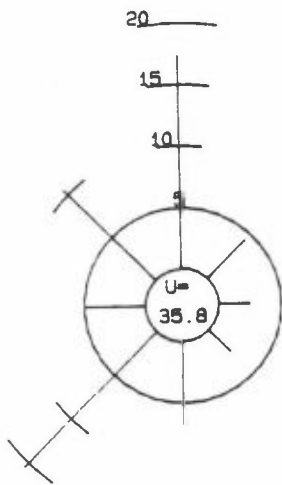
UTO, FINLAND
OZONE > 120. ug/M3 (15)



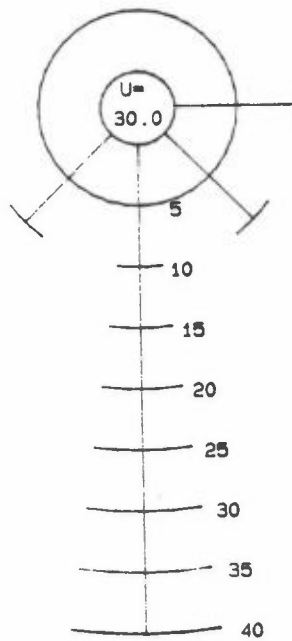
UTO, FINLAND
OZONE > 150. ug/M3 (2)



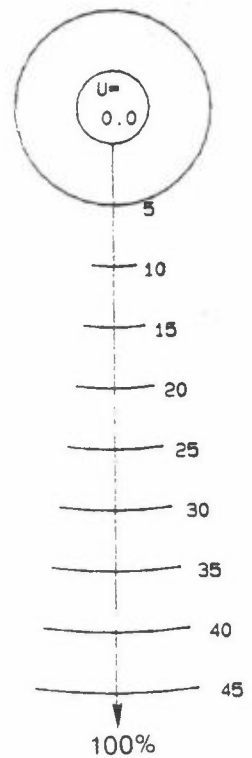
UTO, FINLAND
ALL DAYS (162)



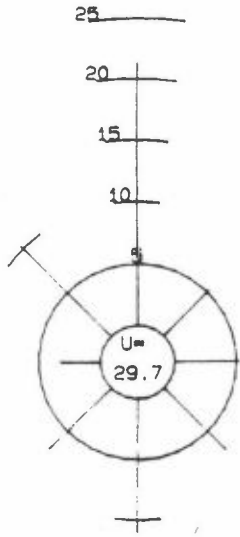
AHTARI, FINLAND
OZONE > 120. ug/M3 (10)



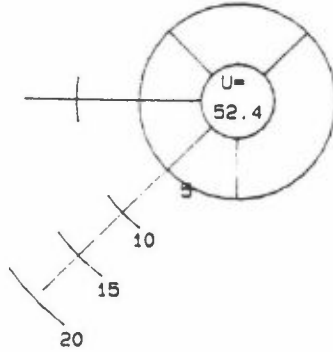
AHTARI, FINLAND
OZONE > 150. ug/M3 (2)



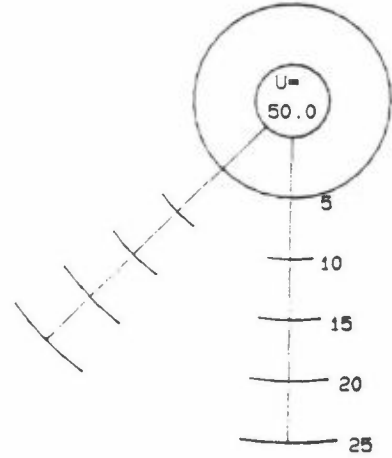
AHTARI, FINLAND
ALL DAYS (155)



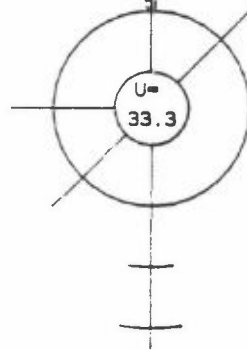
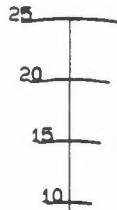
EIBERGEN, NETHERLANDS
OZONE > 120. ug/M3 (21)



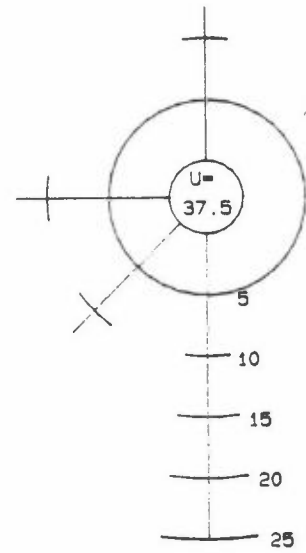
EIBERGEN, NETHERLANDS
OZONE > 150. ug/M3 (4)



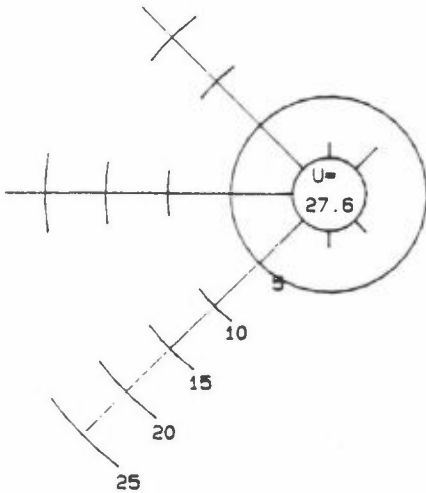
WITTEVEEN, NETHERLANDS
OZONE > 120. ug/M3 (12)



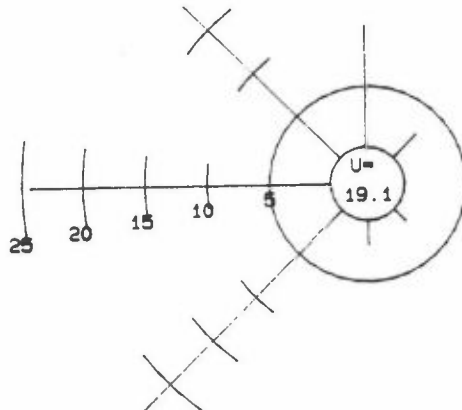
WITTEVEEN, NETHERLANDS
OZONE > 150. ug/M3 (8)



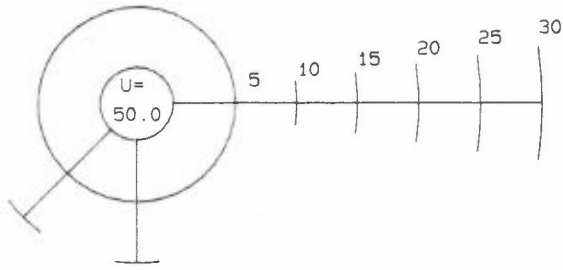
EIBERGEN, NETHERLANDS
ALL DAYS (163)



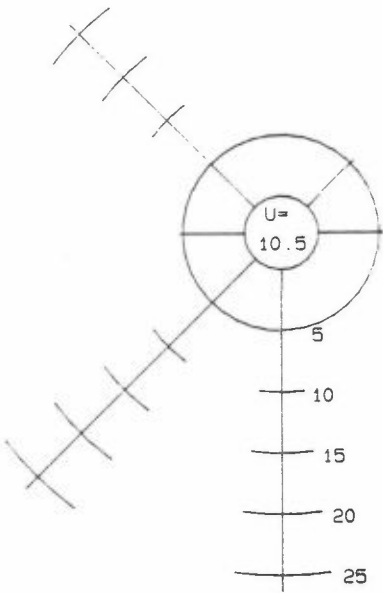
WITTEVEEN, NETHERLANDS
ALL DAYS (152)



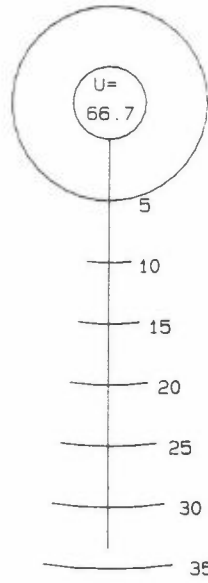
BIRKENES, NORWAY
OZONE > 120. ug/M3 (10)



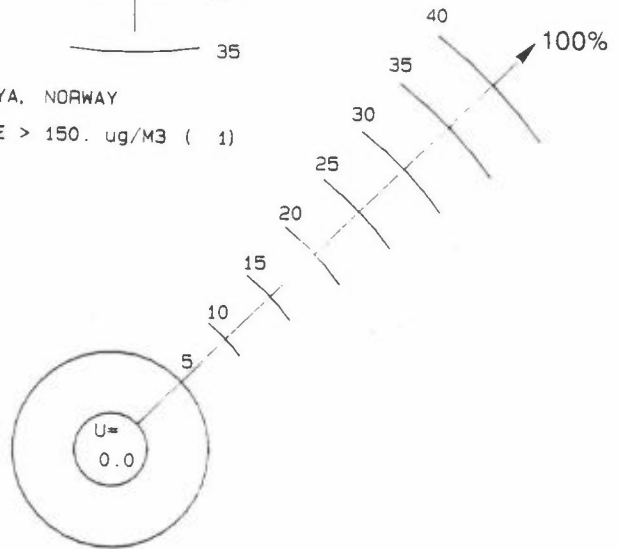
JELØYA, NORWAY
OZONE > 120. ug/M3 (19)



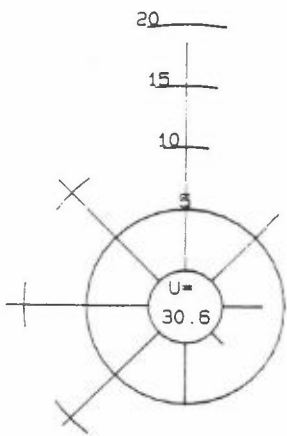
BIRKENES, NORWAY
OZONE > 150. ug/M3 (3)



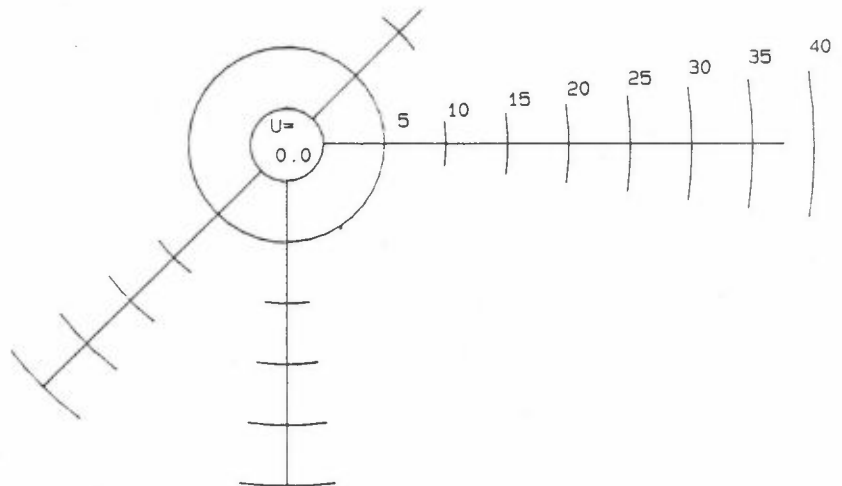
JELØYA, NORWAY
OZONE > 150. ug/M3 (1)



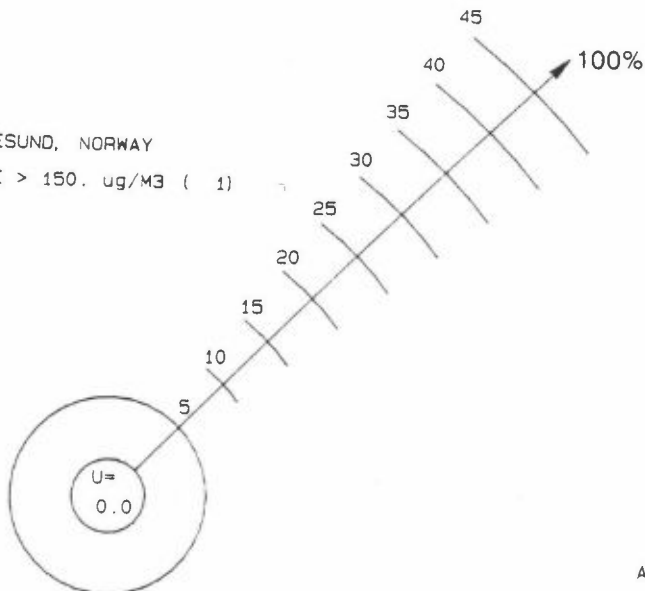
JELØYA, NORWAY
ALL DAYS (157)



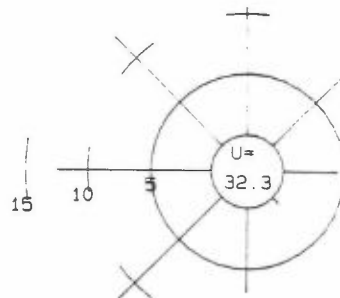
LANGESUND, NORWAY
OZONE > 120. ug/M3 (8)



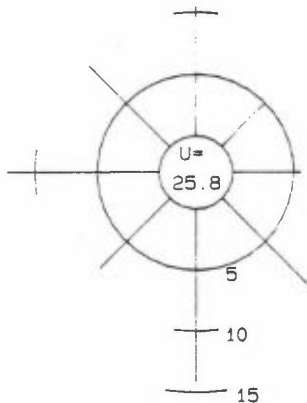
LANGESUND, NORWAY
OZONE > 150. ug/M3 (1)



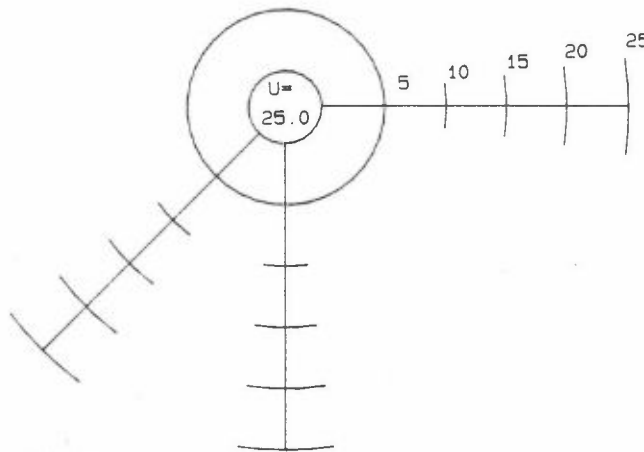
LANGESUND, NORWAY
ALL DAYS (161)



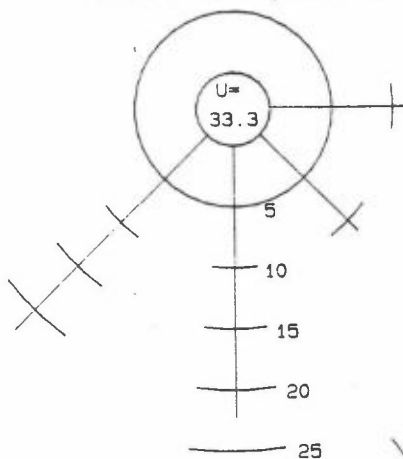
SVANVIK, NORWAY
ALL DAYS (163)



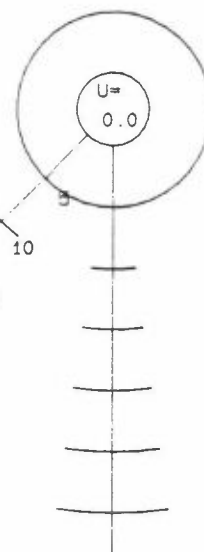
ASPVRETEN, SWEDEN
OZONE > 120. ug/M3 (4)



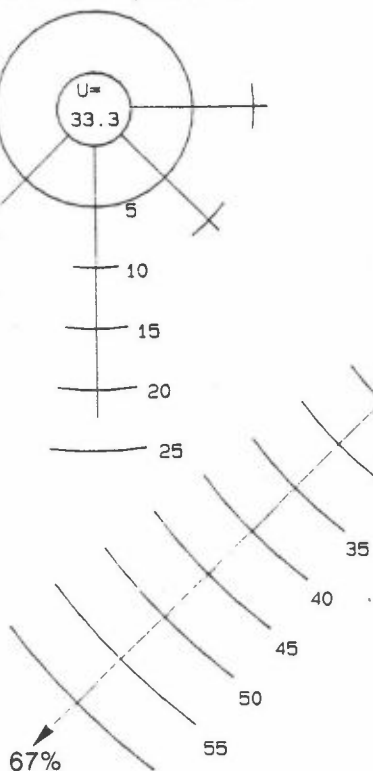
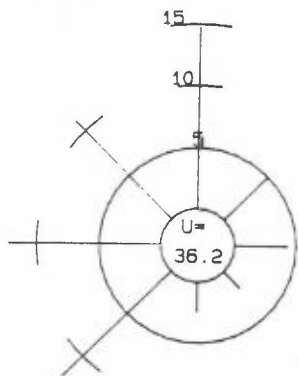
NORRA KVILL, SWEDEN
OZONE > 120. ug/M3 (9)



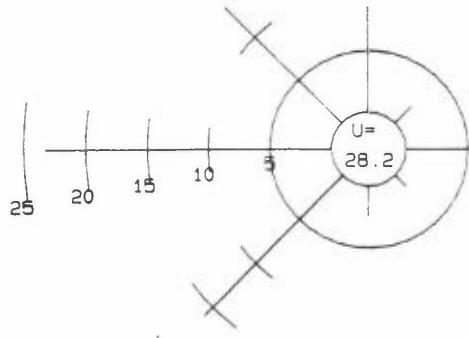
NORRA KVILL, SWEDEN
OZONE > 150. ug/M3 (3)



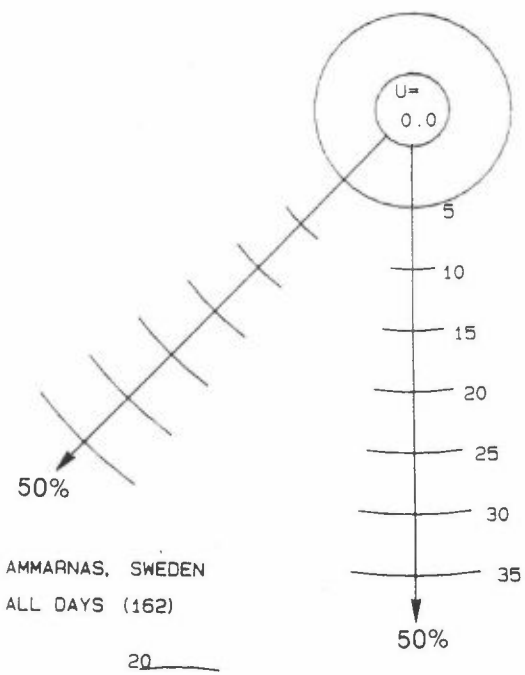
ASPVRETEN, SWEDEN
ALL DAYS (163)



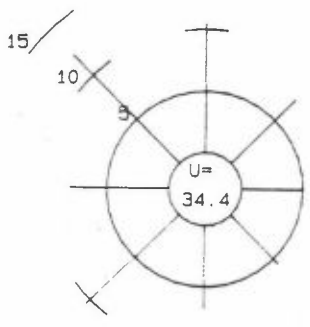
VAVIHILL, SWEDEN
ALL DAYS (163)



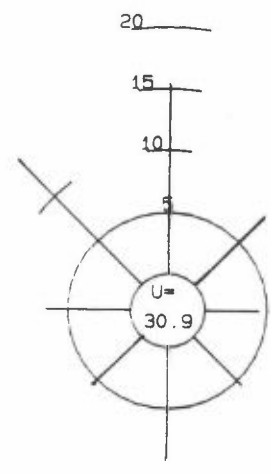
VINDELN, SWEDEN
OZONE > 120. ug/M3 (2)



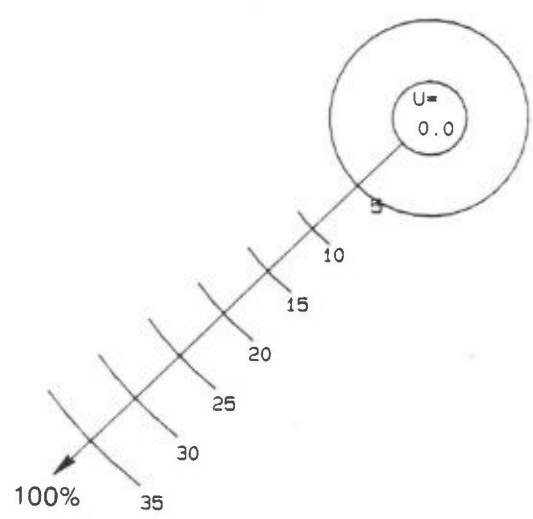
VINDELN, SWEDEN
ALL DAYS (163)



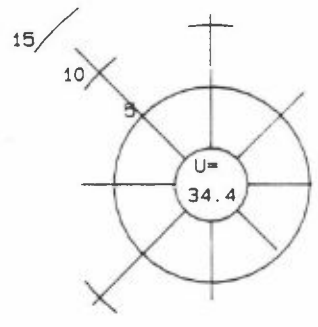
AMMARNAS, SWEDEN
ALL DAYS (162)



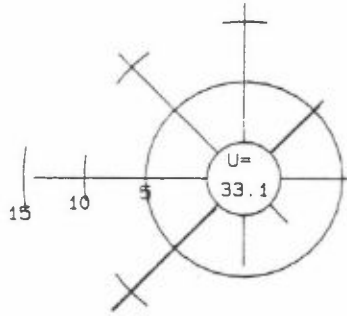
STORMYRSBERGET, SWEDEN
OZONE > 120. ug/M3 (1)



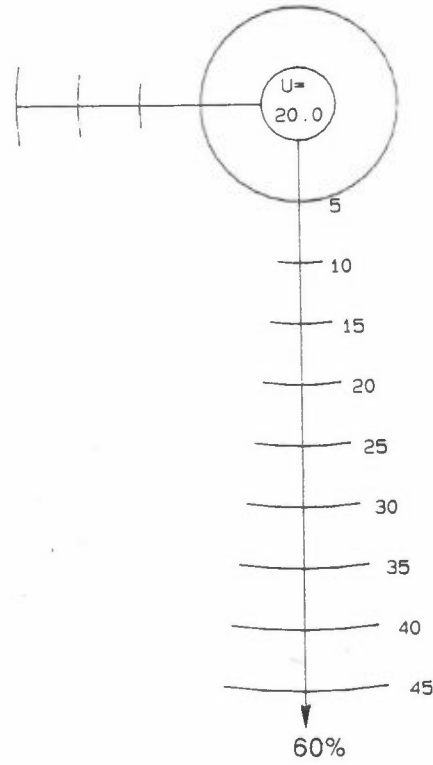
STORMYRSBERGET, SWEDEN
ALL DAYS (157)



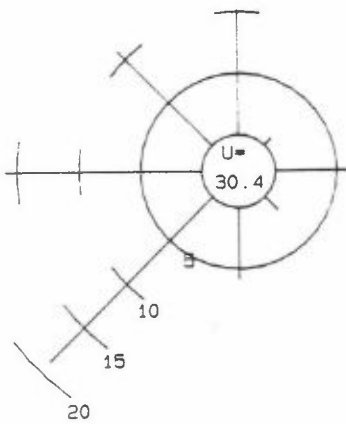
NORRA KVILL, SWEDEN
ALL DAYS (148)



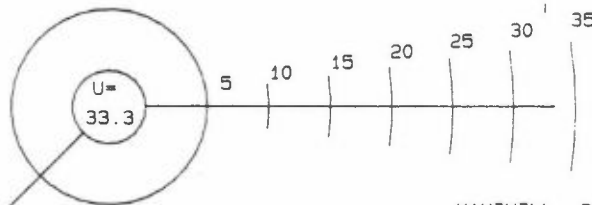
SANNEN, SWEDEN
OZONE > 120. ug/M3 (5)



SANNEN, SWEDEN
ALL DAYS (138)

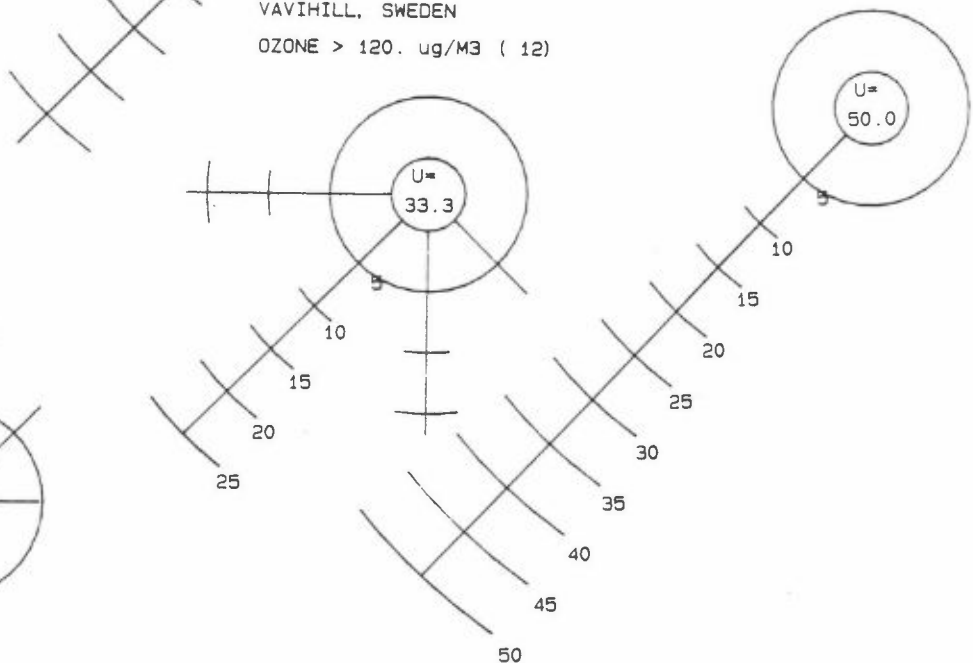


RORVIK, SWEDEN
OZONE > 120. ug/M3 (3)

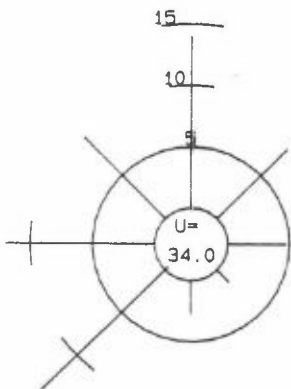


VAVIHILL, SWEDEN
OZONE > 150. ug/M3 (2)

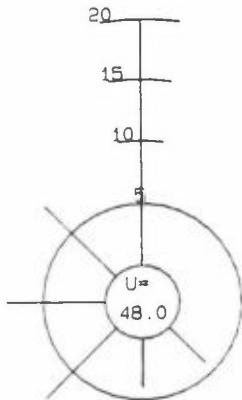
VAVIHILL, SWEDEN
OZONE > 120. ug/M3 (12)



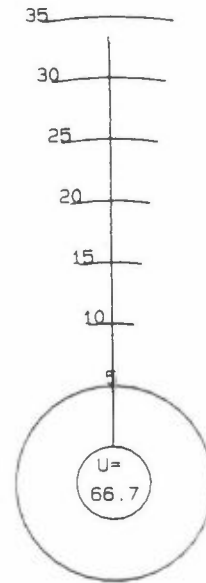
RORVIK, SWEDEN
ALL DAYS (150)



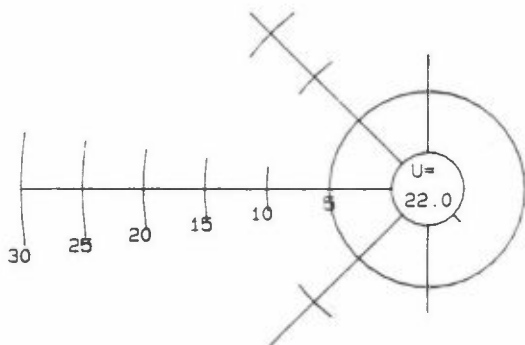
SION, SWITZERLAND
OZONE > 120. ug/M3 (25)



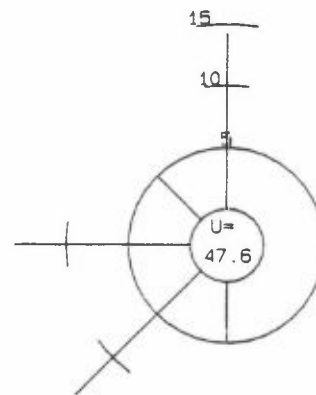
SION, SWITZERLAND
OZONE > 150. ug/M3 (3)



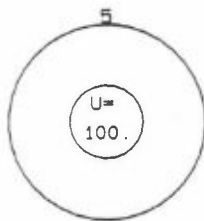
SION, SWITZERLAND
ALL DAYS (127)



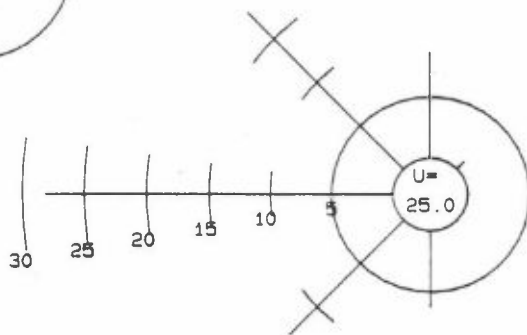
TAENIKON, SWITZERLAND
OZONE > 120. ug/M3 (21)



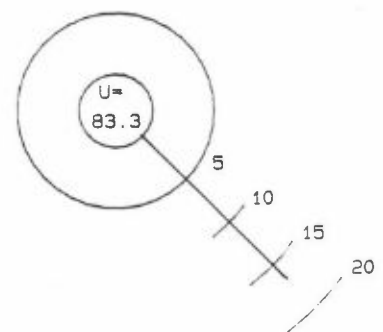
TAENIKON, SWITZERLAND
OZONE > 150. ug/M3 (2)



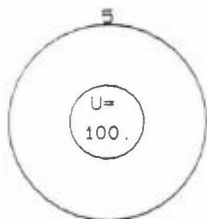
TAENIKON, SWITZERLAND
ALL DAYS (128)



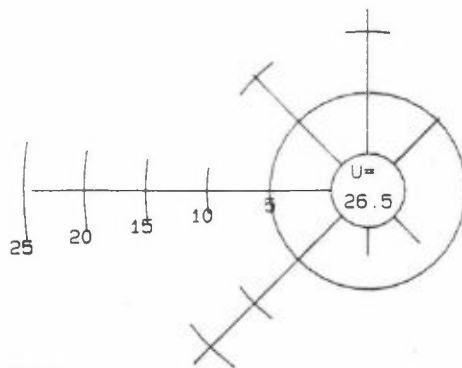
HARWELL, UNITED KINGDOM
OZONE > 120. ug/M3 (6)



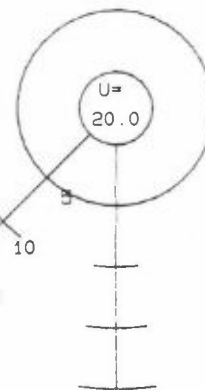
HARWELL, UNITED KINGDOM
OZONE > 150. ug/M3 (2)



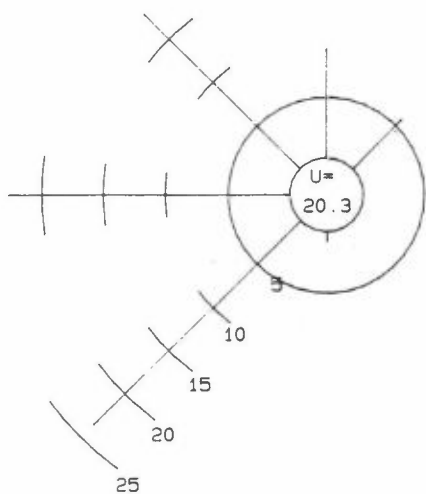
HARWELL, UNITED KINGDOM
ALL DAYS (136)



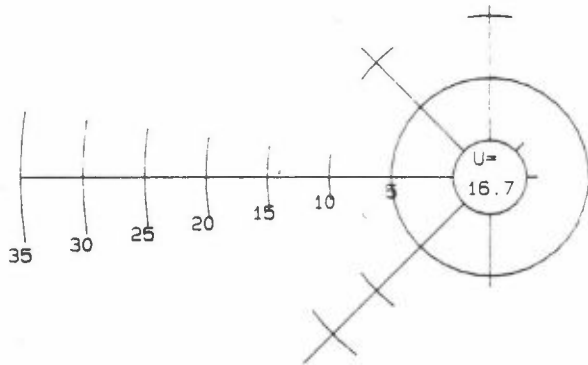
SIBTON, UNITED KINGDOM
OZONE > 120. ug/M3 (5)



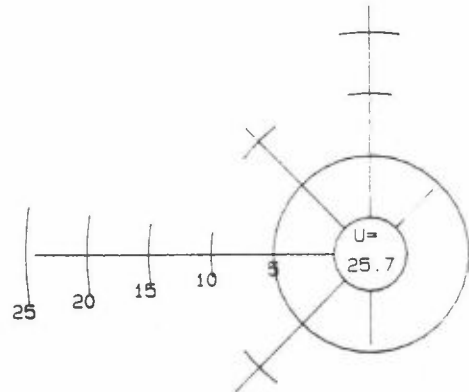
SIBTON, UNITED KINGDOM
ALL DAYS (123)



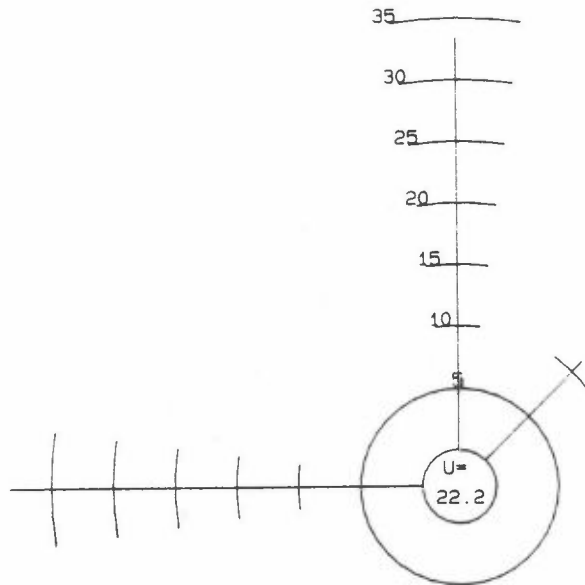
SCHONEBEN, AUSTRIA
ALL DAYS (120)



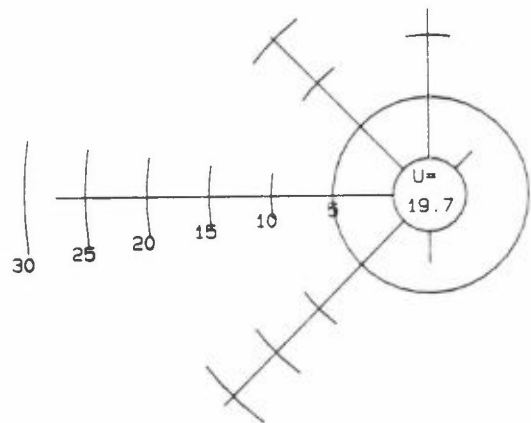
ST.DENIJS, BELGIUM
NO2 > 40. ug/M3 (70)



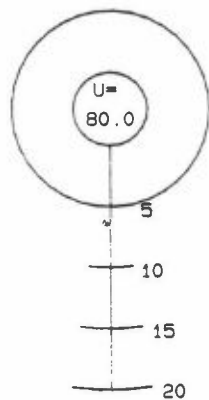
ST.DENIJS, BELGIUM
NO2 > 80. ug/M3 (9)



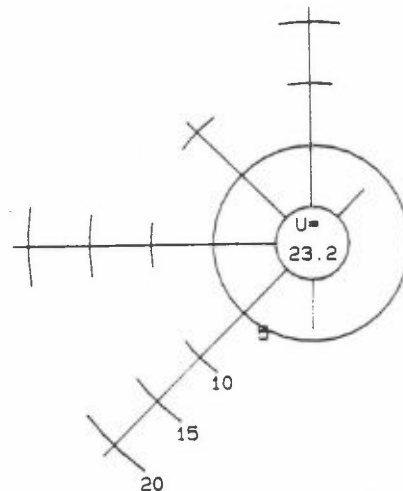
ST.DENIJS, BELGIUM
ALL DAYS (157)



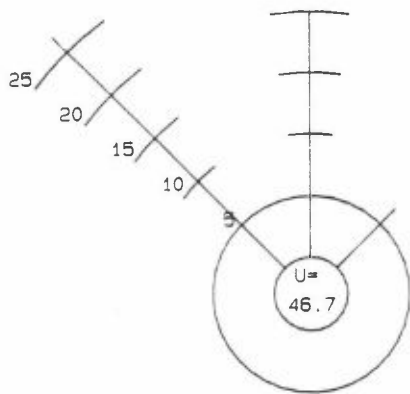
OFFAGNE, BELGIUM
NO2 > 40. ug/M3 (5)



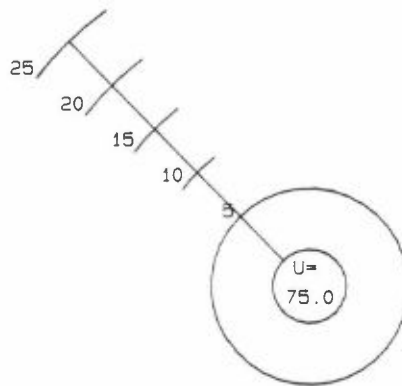
OFFAGNE, BELGIUM
ALL DAYS (99)



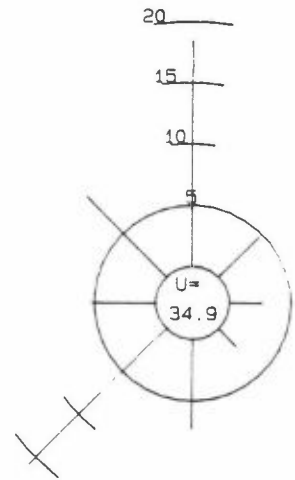
UTO, FINLAND
 NO2 > 40. ug/M3 (15)



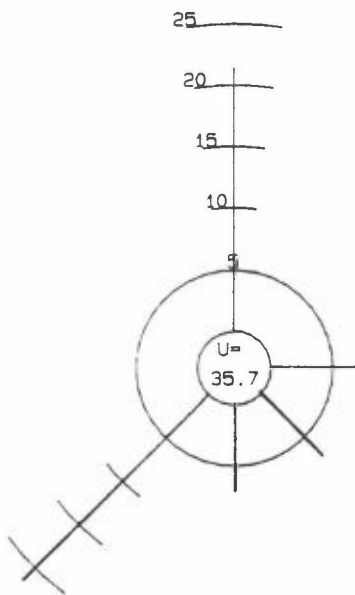
UTO, FINLAND
 NO2 > 80. ug/M3 (4)



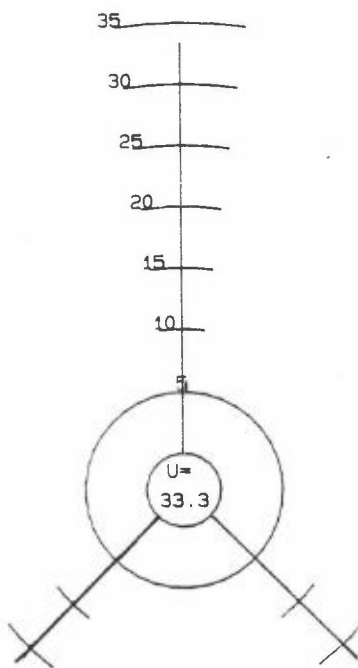
UTO, FINLAND
 ALL DAYS (152)



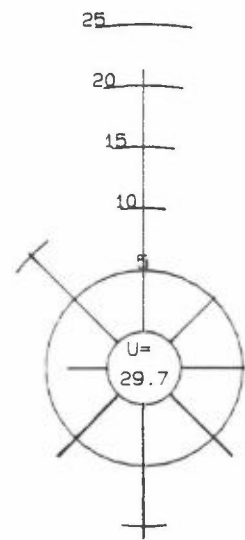
AHTARI, FINLAND
 NO2 > 40. ug/M3 (14)



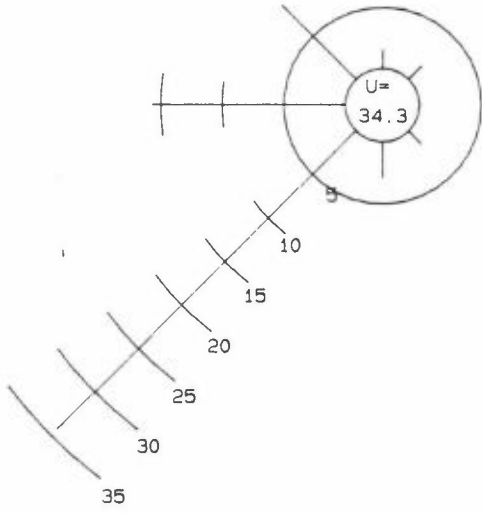
AHTARI, FINLAND
 NO2 > 80. ug/M3 (6)



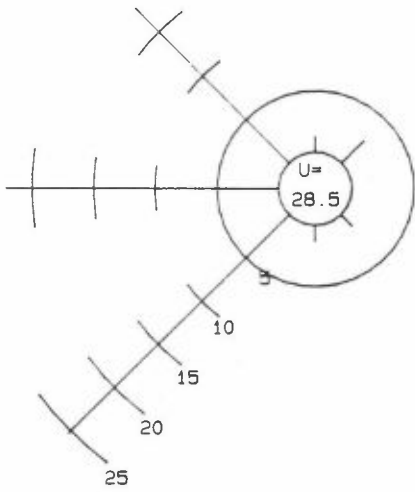
AHTARI, FINLAND
 ALL DAYS (155)



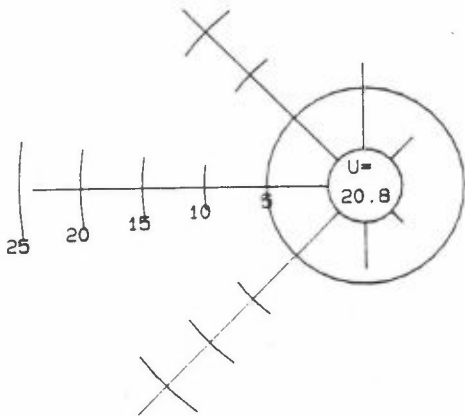
EIBERGEN, NETHERLANDS
 NO2 > 40. ug/M3 (70)



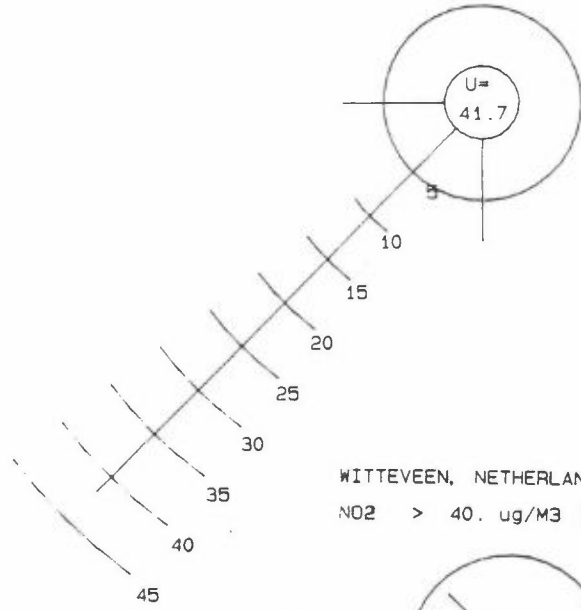
EIBERGEN, NETHERLANDS
 ALL DAYS (158)



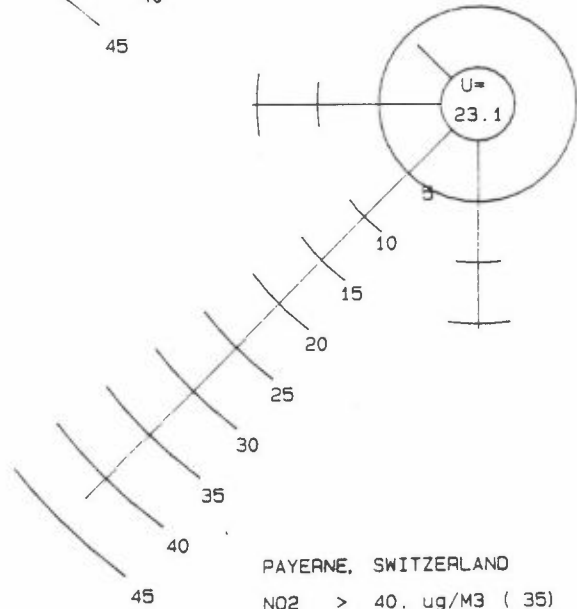
WITTEVEEN, NETHERLANDS
 ALL DAYS (159)



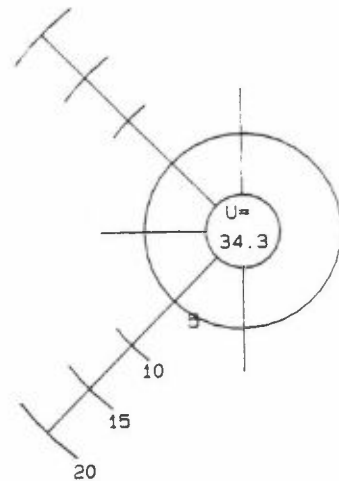
EIBERGEN, NETHERLANDS
 NO2 > 80. ug/M3 (12)



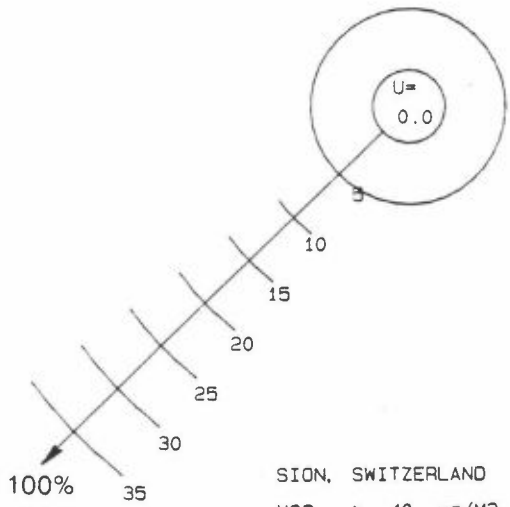
WITTEVEEN, NETHERLANDS
 NO2 > 40. ug/M3 (26)



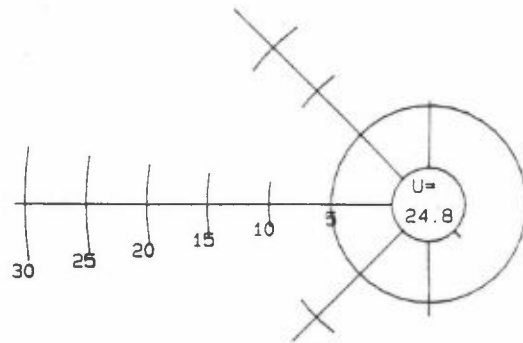
PAYERNE, SWITZERLAND
 NO2 > 40. ug/M3 (35)



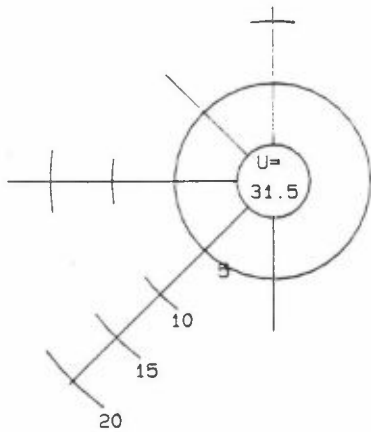
PAYERNE, SWITZERLAND
 NO2 > 80. ug/M3 (1)



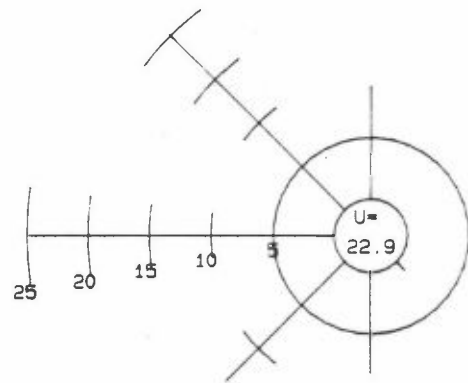
PAYERNE, SWITZERLAND
 ALL DAYS (149)



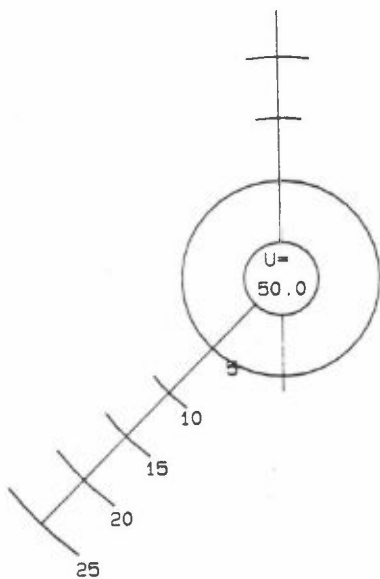
SION, SWITZERLAND
 NO2 > 40. ug/M3 (54)



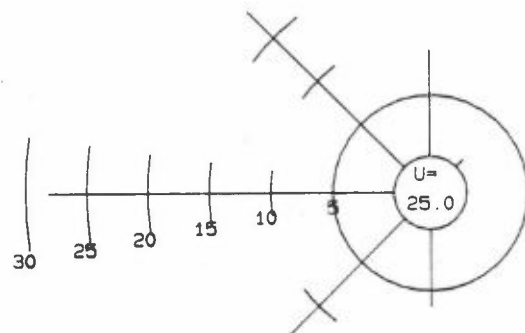
SION, SWITZERLAND
 ALL DAYS (109)



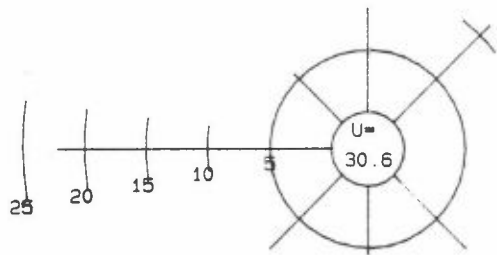
TAENIKON, SWITZERLAND
 NO2 > 40. ug/M3 (16)



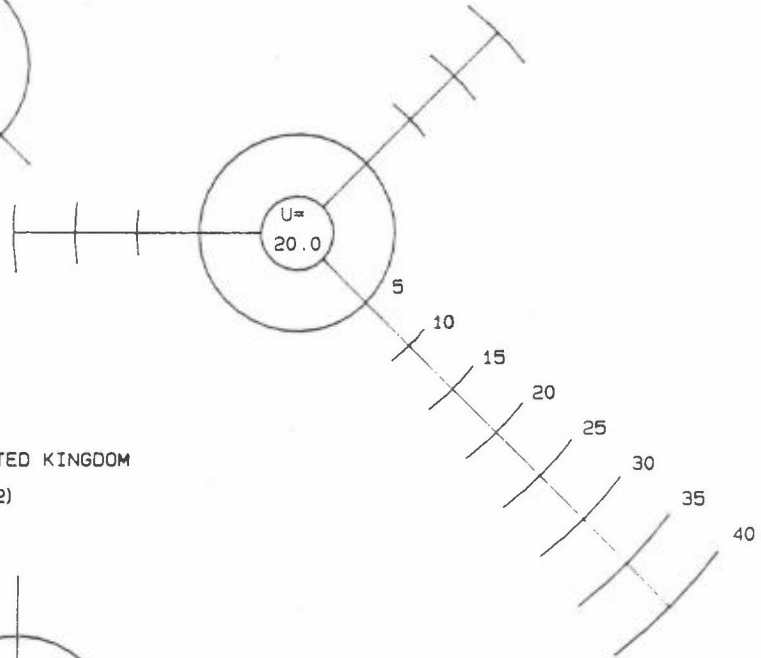
TAENIKON, SWITZERLAND
 ALL DAYS (128)



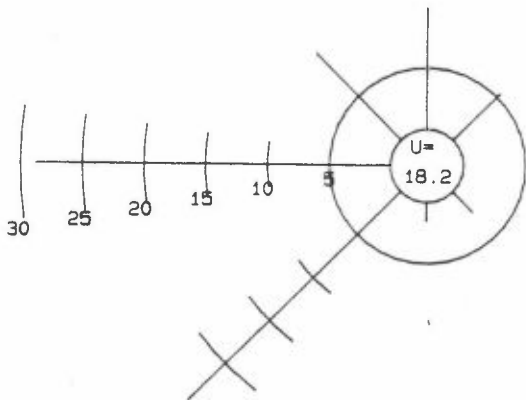
HARWELL, UNITED KINGDOM
 NO2 > 40. ug/M3 (36)



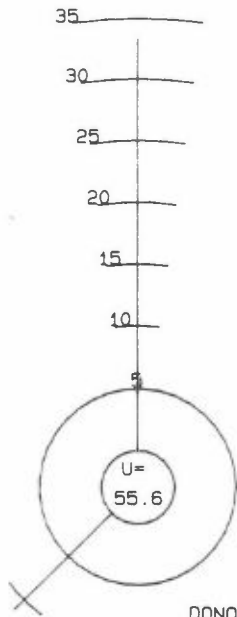
HARWELL, UNITED KINGDOM
 NO2 > 80. ug/M3 (5)



HARWELL, UNITED KINGDOM
 ALL DAYS (132)

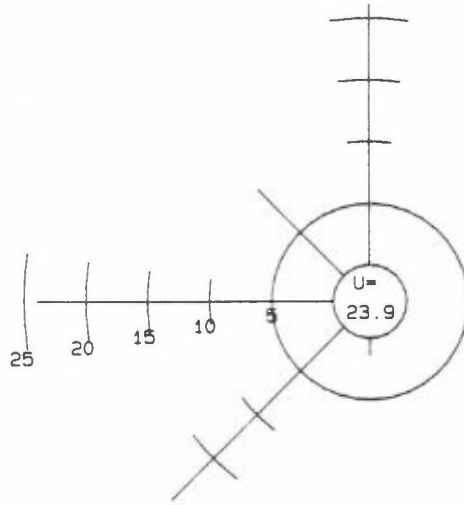


CRETEIL, FRANCE
 PAN > 10. ug/M3 (9)

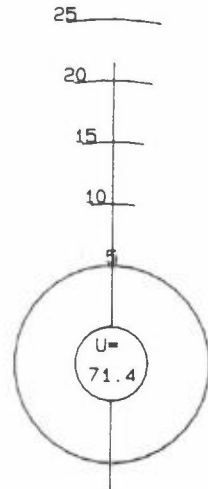


DONON, FRANCE
 ALL DAYS (155)

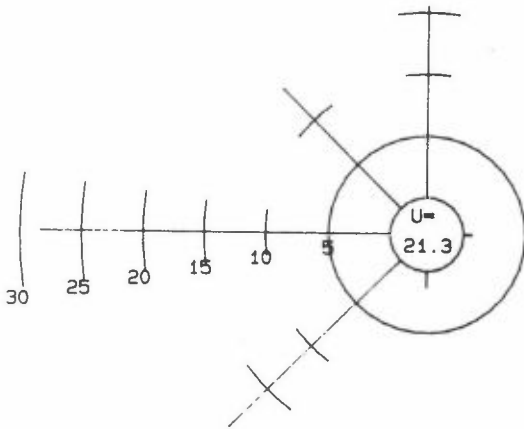
CRETEIL, FRANCE
 ALL DAYS (71)



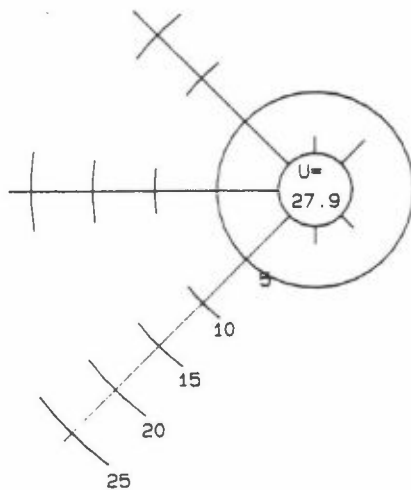
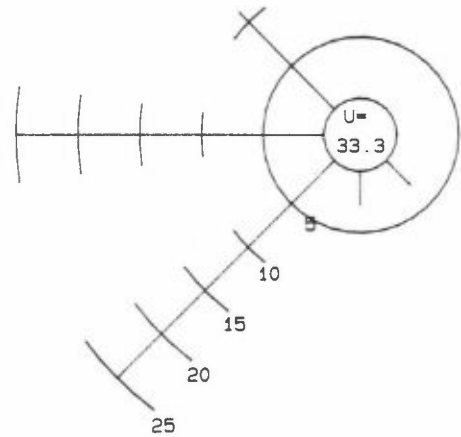
DONON, FRANCE
 PAN > 10. ug/M3 (14)

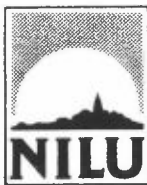


DELFT, NETHERLANDS
 PAN > 10. ug/M3 (36)



DELFT, NETHERLANDS
 ALL DAYS (147)





NORSK INSTITUTT FOR LUFTFORSKNING (NILU)
NORWEGIAN INSTITUTE FOR AIR RESEARCH
POSTBOKS 64, N-2001 LILLESTRØM

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DATO NOVEMBER 1989	ANSV. SIGN. <i>J. Schjoldager</i>	ANT. SIDER 227	PRIS NOK 260.-
TITTEL Oxidant data collection in OECD-Europe 1985-87 (OXIDATE). Report on ozone, nitrogen dioxide and peroxyacetyl nitrate, October 1986-March 1986, April-September 1987 and October-December 1987		PROSJEKTLEDER J. Schjoldager	
		NILU PROSJEKT NR. 0-8535	
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OPPDRAKSGIVER (NAVN OG ADRESSE) Nordisk Ministerråd (Nordic Council of Ministers) Store Strandstræde 18 DK-1255 København K, Danmark			
3 STIKKORD (à maks. 20 anslag) Ozon Nitrogendioksid PAN			
REFERAT (maks. 300 anslag, 7 linjer) Rapporten referer timedata fra 36 målesteder i 11 land i Europa. Ozondata foreligger fra 33 steder, NO ₂ -data fra 12 steder og PAN-data fra tre steder. Høyeste timesverdier og døgnverdier er gitt, sammen med kumulative frekvensfordelinger, midlere døgnvariasjon og fordeling på trajektorie-sektorer og en kort drøfting av ozonepisoder.			

TITLE

ABSTRACT (max. 300 characters, 7 lines)

The report summarizes hourly data from 36 regional measurement stations in 11 countries. Ozone data is given for 33 stations, nitrogen dioxide data for 12 stations and PAN data for three stations. Extreme values, monthly mean concentrations, frequency distributions, diurnal concentration variations and back trajectory sector distributions are given together with a brief discussion of oxidant episodes.

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