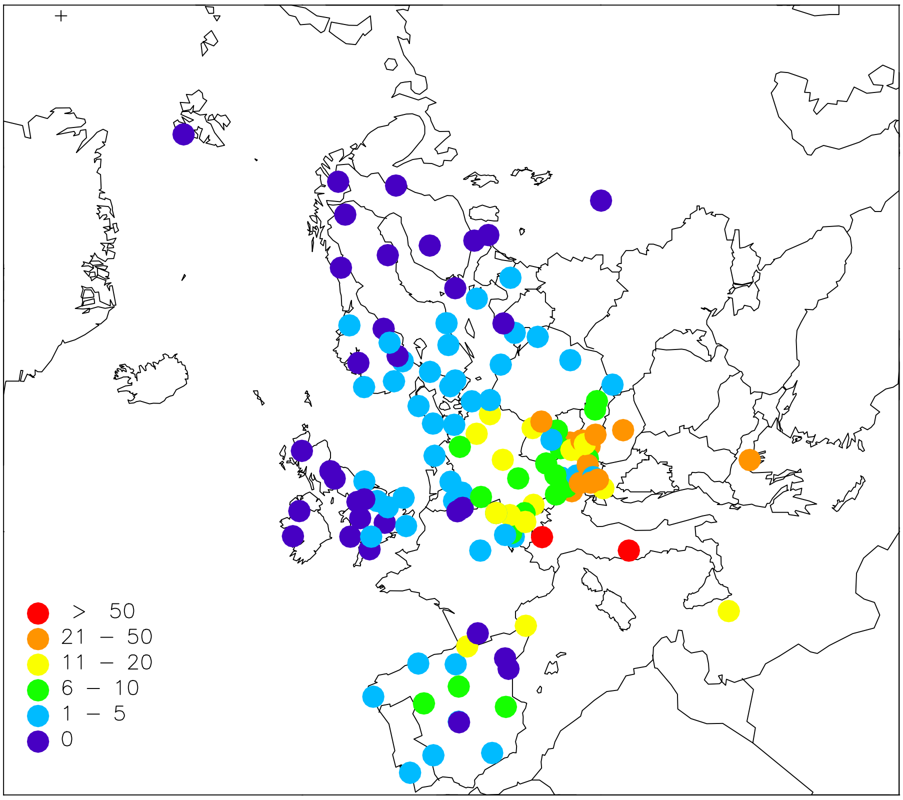
EMEP Co-operative Programme for Monitoring and Evaluation of the Long-Range Transmission of Air Pollutants in Europe

Ozone measurements 2000

Anne-Gunn Hjellbrekke and Sverre Solberg



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1. Introduction

Ozone is a natural constituent of the atmosphere and plays a vital role in many atmospheric processes. However, man made emissions of volatile organic compounds and nitrogen oxides have increased the photochemical formation of ozone in the troposphere. Until the end of the 1960s the problem was basically believed to be one of the big cities and their immediate surroundings. In the 1970s, however, it was found that the problem of photochemical oxidant formation is much more wide-spread. The ongoing monitoring of ozone at rural sites throughout Europe shows that episodes of high concentrations of ground-level ozone occur over most parts of the continent every summer. During these episodes the ozone concentrations can reach values above ambient air quality standards over large regions and lead to adverse effects for human health and vegetation. Historical records of ozone measurements in Europe and North America indicate that in the last part of the nineteenth century the values were only about half of the average surface ozone concentrations measured in the same regions during the last 10-15 years (Bojkov, 1986; Volz and Kley, 1988).

The formation of ozone is due to a large number of photochemical reactions taking place in the atmosphere and depends on the temperature, humidity and solar radiation as well as the primary emissions of nitrogen oxides and volatile organic compounds. Together with the non-linear relationships between the primary emissions and the ozone formation, these effects complicates the abatement strategies for ground-level ozone and makes photochemical models crucial in addition to the monitoring data.

The 1999 Gothenburg Protocol is designed for a joint abatement of acidification, eutrophication and ground-level ozone. It has been estimated that once the Protocol is implemented, the number of days with excessive ozone levels will be halved and that the exposure of vegetation to excessive ozone levels will be 44% down on 1990.

2. Critical levels

Ozone concentrations vary widely from region to region, with the time of year, and with time of day. Typically, high concentrations of ozone are observed in periods with anticyclonic conditions. Such episodes may lead to adverse environmental effects such as impact on human health, agricultural crops, forests and materials. National authorities and international organisations have therefore formulated critical levels for ozone.

The critical levels defined by ECE for protection of vegetation are 150 $\mu g/m^3$ for hourly mean, 60 $\mu g/m^3$ for eight-hour mean and 50 $\mu g/m^3$ for seven-hour mean (9 a.m.–4 p.m.) averaged over the growing season (April–September). According to the EU ozone directive, the threshold values for protection of vegetation are 200 $\mu g/m^3$ for hourly mean and 65 $\mu g/m^3$ for daily mean, while the threshold value for health protection is 110 µg/m^3 for eight-hour mean. In addition information should be given to the population when hourly means exceed 180 µg/m^3 and a warning should be issued if hourly means exceed 360 µg/m^3.

The critical level formulated by WHO for protection of health is 120 µg/m^3 for eight-hour mean.

In defining the harmful effects of ozone exposure to plants, attention must be given to the physiological response to ozone. Ozone is generally taken up through the stomata, and reacts with a number of enzymes and antioxidants. Several studies have shown that plants respond by reduced carbon dioxide uptake, and other symptoms of damage to the respiration system, for ozone exposure above a certain threshold (e.g. Forberg et al., 1987). This concentration threshold varies between plant species, cultivars, and phenological development.

Previously recommended critical levels for ozone based on seven-hour mean concentrations in the growing season do not take into account the existence of such a threshold, and have been criticised because the effects on vegetation of a generally high concentration level of ozone may be less harmful than the exposure to short-term and episodic high concentrations, which may cause permanent damage to the cell tissue.

Within the framework of the UN-ECE Convention on long-range transboundary air pollution, workshops held at Egham, UK (Ashmore and Wilson, 1992) and at Bern, Switzerland (Führer and Achermann, 1994) have recommended that critical levels for ozone exposure should be based on the accumulated exposure in ppb hours over a concentration threshold during the growing season (AOT). The Egham workshop was not able to decide conclusively on the threshold concentration or the accumulated dose corresponding to the critical loads, but the Bern workshop made specific recommendations to use a threshold of 40 ppb. The critical levels were revised at a UN-ECE workshop in Kuopio, Finland (Kärenlampi and Skärby, 1996) with minor changes to the Bern recommendations and are defined as:

- Critical level for agricultural crops: The AOT40 for crops is calculated as an accumulated ozone exposure above a threshold of 40 ppb for a period of three months during daylight hours, defined as those hours the mean global radiation is 50 W/m^2 or greater. The AOT40 value for comparison with the critical level should be calculated as the highest running three months sum during the period when crops are grown. If a fixed period is required for modelling assessment the period May to July should be used. Data from open-top chamber experiments indicate that an AOT40 of 3000 ppbh corresponds to a 5% yield loss for wheat. This value is only applicable when soil moisture is not limiting because of sufficient precipitation or irrigation.

  Short term critical level for crops: The critical levels are defined as:
  - 500 ppbh over five days for high (water) vapour pressure deficit conditions
  - 200 ppbh over five days for low (water) vapour pressure deficit conditions.

  As for the long term critical level, the short term critical levels refer to daylight hours only and should not be applied when soil moisture is limiting.

- For natural vegetation, since the sensitivity of the most sensitive species is considered to be similar to that of the most sensitive crops, the same long term critical level as for agricultural crops is used.

- Critical level for forests: AOT40 of 10 000 ppbh, calculated for daylight hours only, defined as for crops, during a six months period from April to September.

Although these critical loads are based on relatively strong experimental evidence, changes in the formulations may be expected when more information is available on the response of different plants to ozone exposure. The vegetation periods above are defined as being typical of climatic conditions in northern Europe whereas other vegetation periods may be more appropriate for other areas, such as southern Europe and northern Scandinavia.

The critical levels are considered to be suitable for exceedance mapping and integrated assessment modelling, but should not be used for economic assessment of crop or biomass losses. For these purposes, it is needed to take into account different species and modifying factors such as (water) vapour pressure deficit, soil moisture content, nutritional status, altitude, other pollutants etc.

3. Measurement network

Surface ozone measurements have been a part of the EMEP extended (voluntary) measurement activities since the third phase (1 January 1984–31 December 1986). Due to the lack of funds, the systematic collection and checking of data within EMEP, did not start until 1 January 1987. The measurement of ozone data within the EMEP region was a continuation of the OECD's oxidant data collection programme OXIDATE. Ozone data from the OXIDATE project have been reported in three reports (Grennfelt and Schjoldager, 1987; Grennfelt et al., 1988 and 1989).

This report presents surface ozone data measured at rural and background EMEP sites during 2000 with emphasis on statistical summaries and geographical distributions. Earlier reports present ozone data from 1985 (Feister and Pedersen, 1989), 1986 (Feister et al., 1990), 1988 (Pedersen, 1992), 1989 (Pedersen and Kvalvågnes, 1993), 1990–1992 (Hjellbrekke, 1995), 1993-1994 (Hjellbrekke, 1996), 1995 (Hjellbrekke, 1997), 1996 (Hjellbrekke, 1998), 1997 (Hjellbrekke, 1999), 1998 (Hjellbrekke, 2000) and 1999 (Hjellbrekke and Solberg, 2001).

Table 1 and Figure 1 show the location of the monitoring stations reporting data from whole or part of 2000. In total 124 stations in 26 different countries reported data. One of these sites (Ispra) is operated by the Commission of the European Communities in Italy. There are several new sites in Austria, one in Slovakia as well as one on Malta. Two German sites have been closed down. No data from Aliartos (Greece) have been reported this year, but data from a new Greek site, Livadi, have been included. Three Spanish sites have been moved to new locations.

Table 1: List of EMEP ozone monitoring stations in operation 2000.

Code	Station	Country	Latitude	Longitude	Altitude (m)
AT02	Illmitz	Austria	47 46 00 N	16 46 00 E	117
AT04	St.Koloman	Austria	47 39 00 N	13 12 00 E	851
AT05	Vorhegg	Austria	46 40 40 N	12 58 20 E	1020
AT30	Pillersdorf	Austria	48 43 16 N	15 56 32 E	315
AT32	Sulzberg	Austria	47 31 45 N	09 55 36 E	1020
AT33	Stolzalpe	Austria	47 07 45 N	14 12 14 E	1302
AT34	Sonnblick	Austria	47 03 16 N	12 57 30 E	3106
AT37	Zillertalen Alpen	Austria	47 08 13 N	11 52 12 E	1970
AT38	Gerlitzen	Austria	46 41 37 N	13 54 54 E	1895
AT40	Masenberg	Austria	47 20 53 N	15 52 56 E	1170
AT41	Haunsberg	Austria	47 58 23 N	13 00 58 E	730
AT42	Heidenreichstein	Austria	48 52 43 N	15 02 48 E	570
AT43	Forsthof	Austria	48 06 22 N	15 55 10 E	581
AT44	Graz Platte	Austria	47 06 47 N	15 28 14 E	651
AT45	Dunkelsteinerwald	Austria	48 22 16 N	15 32 48 E	320
AT46	Gaenserndorf	Austria	48 20 05 N	16 43 50 E	161
AT47	Stixneusiedl	Austria	48 03 03 N	16 40 36 E	240
BE01	Offagne	Belgium	49 52 40 N	05 12 13 E	430
BE32	Eupen	Belgium	50 37 46 N	06 00 10 E	295
BE35	Vezin	Belgium	50 30 12 N	04 59 22 E	160
CH02	Payerne	Switzerland	46 49 00 N	06 57 00 E	500
CH03	Taenikon	Switzerland	47 29 00 N	08 54 00 E	540
CH04	Chaumont	Switzerland	47 03 00 N	06 59 00 E	1130
CH05	Rigi	Switzerland	47 04 00 N	08 28 00 E	1028
CZ01	Svratouch	Czech Republic	49 44 00 N	16 02 00 E	737
CZ03	Kosetice	Czech Republic	49 35 00 N	15 05 00 E	633
DE01	Westerland	Germany	54 55 32 N	08 18 35 E	12
DE02	Waldhof	Germany	52 48 08 N	10 45 34 E	73
DE03	Schauinsland	Germany	47 54 53 N	07 54 31 E	1205
DE04	Deuselbach	Germany	49 45 53 N	07 03 07 E	480
DE05	Brotjacklriegel	Germany	48 49 10 N	13 13 09 E	1016
DE07	Neuglobsow	Germany	53 09 00 N	13 02 00 E	62
DE08	Schmücke	Germany	50 39 00 N	10 46 00 E	937
DE09	Zingst	Germany	54 26 00 N	12 44 00 E	1
DE12	Bassum	Germany	52 51 00 N	08 43 00 E	52
DE17	Ansbach	Germany	49 18 00 N	10 34 00 E	481
DE26	Ueckermünde	Germany	53 45 00 N	14 04 00 E	1
DE35	Lückendorf	Germany	50 50 00 N	14 46 00 E	490
DE39	Aukrug	Germany	54 04 29 N	09 47 34 E	15
DK31	Ulborg	Denmark	56 17 00 N	08 26 00 E	10
DK32	Frederiksborg	Denmark	55 58 00 N	12 20 00 E	10
EE09	Lahemaa	Estonia	59 30 00 N	25 54 00 E	32
EE11	Vilsandi	Estonia	58 23 00 N	21 49 00 E	6
ES01	San Pablo	Spain	39 32 52 N	04 20 55 W	917
ES03	Tortosa	Spain	40 49 14 N	00 29 29 E	44
ES04	Logroño	Spain	42 27 28 N	02 30 11 W	445
ES05	Noia	Spain	42 43 41 N	08 55 25 W	683
ES07	Viznar	Spain	37 14 18 N	03 28 28 W	1230
ES08	Niembro	Spain	43 26 32 N	04 51 01 W	134
ES09	Campisabalos	Spain	41 16 52 N	03 08 34 W	1360
ES10	Cabo de Creus	Spain	42 19 10 N	03 19 01 E	23
ES11	Barcarrola	Spain	38 28 33 N	06 55 22 W	393
ES12	Zarra	Spain	39 05 10 W	01 06 07 W	885
ES13	Penausende	Spain	41 17 00 N	05 52 00 W	985
ES14	Els Torms	Spain	41 24 00 N	00 43 00 E	470
ES15	Risco Llano	Spain	39 31 00 N	04 21 00 W	1241
FI09	Utö	Finland	59 47 00 N	21 23 00 E	7
FI17	Virolahti	Finland	60 31 00 N	27 41 00 E	8

Table 1, cont.

Code	Station	Country	Latitude	Longitude	Altitude (m)
FI22	Oulanka	Finland	66 19 00 N	29 25 00 E	310
FI37	Ähtäri II	Finland	62 35 00 N	24 11 00 E	180
FR08	Donon	France	48 30 00 N	07 08 00 E	775
FR09	Revin	France	49 54 00 N	04 38 00 E	390
FR10	Morvan	France	47 16 00 N	04 05 00 E	620
FR12	Iraty	France	43 02 00 N	01 05 00 W	1300
FR13	Peyrusse Vieille	France	43 22 00 N	02 06 00 E	200
FR14	Montandon	France	47 18 00 N	06 49 00 E	746
GB02	Eskdalemuir	United Kingdom	55 19 00 N	03 12 00 W	269
GB06	Lough Navar	United Kingdom	54 27 00 N	07 54 00 W	130
GB13	Yarner Wood	United Kingdom	50 36 00 N	03 42 00 W	119
GB14	High Muffles	United Kingdom	54 20 00 N	00 48 00 W	267
GB15	Strath Vaich	United Kingdom	57 44 00 N	04 47 00 W	270
GB31	Aston Hill	United Kingdom	52 30 00 N	03 20 00 W	370
GB32	Bottesford	United Kingdom	52 56 00 N	00 49 00 W	32
GB33	Bush	United Kingdom	55 52 00 N	03 12 00 W	180
GB34	Glazebury	United Kingdom	53 28 00 N	02 28 00 W	21
GB36	Harwell	United Kingdom	51 34 00 N	01 19 00 W	137
GB37	Ladybower	United Kingdom	53 20 00 N	01 45 00 W	420
GB38	Lullington Heath	United Kingdom	50 47 00 N	00 11 00 E	120
GB39	Sibton	United Kingdom	52 18 00 N	01 28 00 E	46
GB43	Narberth	United Kingdom	51 46 53 N	04 41 34 W	160
GB44	Somerton	United Kingdom	51 13 52 N	03 02 53 W	55
GB45	Wicken Fell	United Kingdom	52 17 54 N	00 17 34 W	5
GR02	Livadi	Greece	40 32 00 N	23 15 00 E	850
HU02	K-puszta	Hungary	46 58 00 N	19 35 00 E	125
IE31	Mace Head	Ireland	53 10 00 N	09 30 00 W	15
IT01	Montelibretti	Italy	42 06 00 N	12 38 00 E	48
IT04	Ispra	Italy	45 48 00 N	08 38 00 E	209
LT15	Preila	Lithuania	55 21 00 N	21 04 00 E	5
LV10	Rucava	Latvia	56 13 00 N	21 13 00 E	18
MT01	Giordan lighthouse	Malta	36 6 0 N	14 12 0 E	160
NL09	Kollumerwaard	Netherlands	53 20 00 N	06 17 00 E	1
NL10	Vreedepeel	Netherlands	51 32 28 N	05 51 13 E	28
NO01	Birkenes	Norway	58 23 00 N	08 15 00 E	190
NO15	Tustervatn	Norway	65 50 00 N	13 55 00 E	439
NO39	Kårvatn	Norway	62 47 00 N	08 53 00 E	210
NO41	Osen	Norway	61 15 00 N	11 47 00 E	440
NO42	Spitsbergen, Zeppelin	Norway	78 54 00 N	11 53 00 E	474
NO43	Prestebakke	Norway	59 00 00 N	10 36 00 E	160
NO45	Jeløya	Norway	59 26 00 N	10 36 00 E	3
NO48	Voss	Norway	60 36 00 N	06 32 00 E	500
NO52	Sandve	Norway	59 12 00 N	05 12 00 E	15
NO55	Karasjok	Norway	69 28 00 N	25 13 00 E	333
NO56	Hurdal	Norway	60 22 00 N	11 04 00 E	300
PL02	Jarczew	Poland	51 19 00 N	21 59 00 E	180
PL03	Sniezka	Poland	50 44 00 N	15 44 00 E	1604
PL04	Leba	Poland	54 45 00 N	17 32 00 E	2
PL05	Diabla Gora	Poland	54 09 00 N	22 04 00 E	157
PT04	Monte Velho	Portugal	38 05 00 N	08 48 00 W	43
RU16	Shepeljovo	Russia	59 58 00 N	29 07 00 E	4
RU18	Danki	Russia	54 54 00 N	37 48 00 E	150
SE02	Rörvik	Sweden	57 25 00 N	11 56 00 E	10
SE11	Vavihill	Sweden	56 01 00 N	13 09 00 E	175
SE12	Aspvreten	Sweden	58 48 00 N	17 23 00 E	20
SE13	Esrange	Sweden	67 53 00 N	21 04 00 E	475

Table 1, cont.

Code	Station	Country	Latitude	Longitude	Altitude (m)
SE32	Norra Kvill	Sweden	57 49 00 N	15 34 00 E	261
SE35	Vindeln	Sweden	64 15 00 N	19 46 00 E	225
SI08	Iskrba	Slovenia	45 34 00 N	14 52 00 E	520
SI31	Zavodnje	Slovenia	46 25 43 N	15 00 12 E	770
SI32	Krvavec	Slovenia	46 17 58 N	14 32 19 E	1740
SI33	Kovk	Slovenia	46 07 43 N	15 06 50 E	600
SK02	Chopok	Slovakia	48 56 00 N	19 35 00 E	2008
SK04	Stará-Lesná	Slovakia	49 09 00 N	20 17 00 E	808
SK06	Starina	Slovakia	49 03 00 N	22 16 00 E	345

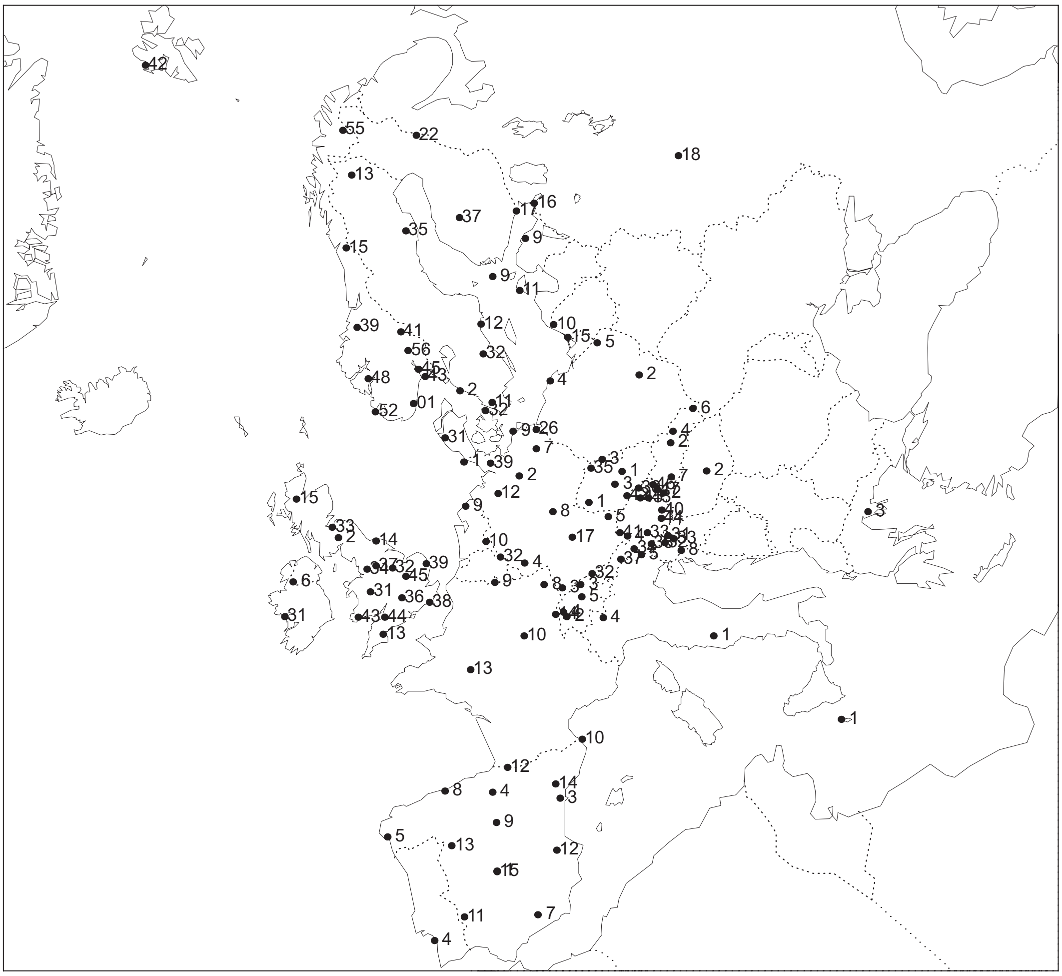

Figure 1: Location of the monitoring stations.

At Donon (FR08) the measurements are taken at four different heights above the ground:

FR08A: 8.6 m, ground level
FR08B: 17.6 m, half height of the trees
FR08C: 31.2 m, canopy of the trees
FR08D: 45.2 m, approximately 15 m above the trees

The ozone sites are situated mainly in central, western and northern Europe and the network density is insufficient in the eastern and Mediterranean parts of Europe.

The monitoring stations have been selected by the countries and only a small number of them are regular EMEP sites. Information about the ozone data quality, calibration and maintenance procedures have during 2000 been collected from the participants (Aas et al., 2000).

The UV-absorption method was the only measurement method in use in 2000.

All data presented in this report are given in $\mu g/m^3$. The conversion factor used to calculate from ppb to $\mu g/m^3$ is given in Table 2. Most countries use a conversion factor of 2.0, which corresponds to 20°C and 1013 hPa. Switzerland uses the mean annual conditions at the stations (9°C and 950 mbar at Payerne, Tänikon, Rigi, Chaumont and Sion). A number of countries report ozone data in ppb, and in this case the data are converted to $\mu g/m^3$ by multiplying by 2.0 at the CCC.

Table 2: Conversion factor ppb – $\mu g/m^3$.

Country	Conversion factor
Austria	2.0
Belgium	unknown
Czech Republic	2.0
Denmark	2.0
Estonia	2.14
Finland	2.0
France	2.0
Germany	2.0
Greece	1.96
Hungary	2.0
Ireland (Mace Head)	reported in ppb
Italy (Ispra)	2.0
Italy (Montelibretti)	reported in ppb
Latvia	2.0
Lithuania	2.0
Netherlands	2.0
Norway	2.0
Poland	2.0
Portugal	1.96
Russia	2.0
Slovakia	reported in ppb
Slovenia	2.0
Spain	2.0
Sweden	2.0
Switzerland	1.96
United Kingdom	reported in ppb

4. Data completeness

The annual data capture (number of valid measurements in per cent of the total number of measurements) for each station is given in Table 3. The capture was in general good, and in 2000 as many as 99 stations had a capture above 90%. No sites had a data capture lower than 50%, except a few Spanish sites where the measurements started or ended during 2000.

Table 3: Data capture in per cent, 2000.

Code	Station	Data capture 2000
AT02	Illmitz	95.6
AT04	Koloman	95.2
AT05	Vorhegg	94.9
AT30	Pillersdorf	95.4
AT32	Sulzberg	98.0
AT33	Stolzalpe	91.9
AT34	Sonnblick	96.1
AT37	Zillertalen Alpen	97.7
AT38	Gerlitzen	86.1
AT40	Masenberg	95.2
AT41	Haunsberg	99.2
AT42	Heidenreichstein	93.4
AT43	Forsthof	95.6
AT44	Graz Platte	98.7
AT45	Dunkelsteinerwald	94.8
AT46	Gaenserndorf	96.9
AT47	Stixneusiedl	95.6
BE01	Offagne	92.3
BE32	Eupen	94.7
BE35	Vezin	95.2
CH02	Payerne	92.7
CH03	Taenikon	94.7
CH04	Chaumont	92.7
CH05	Rigi	93.5
CZ01	Svratouch	98.9
CZ03	Kosetice	99.9
DE01	Westerland	97.8
DE02	Waldhof	92.1
DE03	Schauinsland	96.4
DE04	Deuselbach	74.0
DE05	Brotjacklriegel	90.6
DE07	Neuglobsow	94.0
DE08	Schmücke	95.9
DE09	Zingst	98.6
DE12	Bassum	95.6
DE17	Ansbach	86.8
DE26	Ueckermünde	95.8
DE35	Lückendorf	91.3
DE39	Aukrug	92.1
DK31	Ulborg	96.7
DK32	Frederiksborg	97.0
EE09	Lahemaa	99.5
EE11	Vilsandi	94.8
ES01	San Pablo	42.5
ES03	Tortosa	41.1
ES04	Logroño	91.8
ES05	Noia	40.8

Table 3, cont.

Code	Station	Data capture 2000
ES07	Viznar	93.2
ES08	Niembro	94.3
ES09	Campisabalos	88.6
ES10	Cabo de Creus	93.5
ES11	Barcarrota	92.7
ES12	Zarra	94.9
ES13	Penausende	39.4
ES14	Els Torms	15.3
ES15	Risco Llano	14.5
FI09	Uto	99.0
FI17	Virolahti	98.9
FI22	Oulanka	99.5
FI37	Ahtari II	99.4
FR08A	Donon	97.0
FR08B	Donon	97.1
FR08C	Donon	34.9
FR08D	Donon	98.0
FR09	Revin	99.0
FR10	Morvan	93.2
FR12	Iraty	87.1
FR13	Peyrusse Vieille	97.2
FR14	Montandon	94.8
GB02	Eskdalemuir	98.8
GB06	Lough Navar	90.3
GB13	Yarner Wood	81.3
GB14	High Muffles	94.4
GB15	Strath Vaich	96.3
GB31	Aston Hill	90.6
GB32	Bottesford	99.3
GB33	Bush	92.9
GB34	Glazebury	75.8
GB36	Harwell	97.6
GB37	Ladybower	95.4
GB38	Lullington Heath	90.3
GB39	Sibton	91.6
GB43	Narberth	72.3
GB44	Somerton	92.4
GB45	Wicken Fen	76.2
GR03	Livadi	60.3
HU02	K-puszta	97.6
IE31	Mace Head	97.1
IT01	Montelibretti	86.5
IT04	Ispra	97.2
LT15	Preila	84.8
LV10	Rucava	93.6
MT01	Giordan lighthouse	99.6
NL09	Kollumerwaard	98.1
NL10	Vredepeel	94.0
NO01	Birkenes	99.7
NO15	Tustervatn	99.7
NO39	Kaarvatn	99.9
NO41	Osen	99.4
NO42	Zeppelinfjellet	86.6
NO43	Prestebakke	98.9
NO45	Jeloya	92.2
NO48	Voss	99.8
NO52	Karmoy	95.7

Table 3, cont.

Code	Station	Data capture 2000
NO55	Karasjok	99.3
NO56	Hurdal	98.2
PL02	Jarczew	88.2
PL03	Sniezka	99.9
PL04	Leba	98.1
PL05	Diabla Gora	97.7
PT04	Monte Velho	67.0
RU16	Shepeljovo	64.4
RU18	Danki	80.1
SE02	Rorvik	99.7
SE11	Vavihill	98.7
SE12	Aspvreten	84.0
SE13	Esrange	99.9
SE32	Norra Kvill	99.8
SE35	Vindeln	97.8
SI08	Iskrba	90.3
SI31	Zavodnje	91.6
SI32	Krvavec	95.0
SI33	Kovk	91.3
SK02	Chopok	73.2
SK04	Stara-Lesna	94.1
SK06	Starina	92.1
SK07	Topolniky	91.0

Missing data in the measurement series may be critical, especially in summer when the highest ozone concentrations occur. In particular calculations of AOT40 values may be strongly affected by missing data, and a correction is necessary in order to obtain comparable calculations. In the mapping of AOT40, a 85% data capture has been required and an adjustment proportional to the number of missing data has been applied, i.e. exposure index divided by the fraction of data available. This correction will give a good approximation when the missing data are randomly scattered throughout the dataset, but a better correction is needed for larger gaps in the dataset. Calculations of percentiles are less sensitive to missing data, and a data capture of 75% has been regarded as sufficient for the mapping.

5. Concentration summaries and episodes

Table 1.1 in Annex 1 shows the extreme concentrations for 2000. The number of hours and days the ozone concentrations exceed 120, 150, 180 and 200 $\mu g/m^3$ and the maxima are given. The highest hourly mean values was found at the two Italian sites Montelibretti (257 $\mu g/m^3$, 6 July) and Ispra (252 $\mu g/m^3$, 7 July). Values above 200 $\mu g/m^3$ were during 2000 measured at several sites in Germany, Austria, Switzerland, Poland, Slovenia, Sweden and Denmark, mainly during an ozone episode around 20 June. The lowest maximum values were observed at Spitsbergen, Zeppelin (95 $\mu g/m^3$, 18 May).

The one hour critical level for ozone formulated by the ECE for protection of vegetation, 150 $\mu g/m^3$, was in 2000 exceeded at 95 sites (Figure 1.3). In the central parts of Europe the exceedances were considerable, and at Ispra this limit was exceeded 60 days during 2000.

Figure 1.4 shows the number of exceedances of the threshold value of 180 μg/m^3 formulated by the EU for informing the public. Two sites, Ispra and Montelibretti, exceeds the threshold value more than 10 days. The data are in good agreement with data submitted to the European Commission under Directive 92/72/EEC on air pollution by ozone (de Leeuw et. al., 2001).

Table 1.2 shows the 25-, 50-, 75-, 90-, 95-, 98- and 99-percentiles for the period April–September. Graphical distributions of the 99-percentile and 95-percentile are shown in Figure 1.1 and Figure 1.2. The lowest values are found in Ireland, Scotland and northern Scandinavia, where the 99-percentile is below 120 μg/m^3. Low concentrations are also measured in Latvia and Lithuania. The concentrations are higher in central Europe, where the 99-percentile generally ranges from 150-170 μg/m^3. The concentration levels on the Iberian peninsula are inconsistent, possibly due to local influence and topographical differences.

6. Calculation of AOT40

According to the workshop on critical levels for ozone in Europe, held in Kuopio, 1996, the AOT40 values for forest and agricultural crops is accumulated during daylight hours only, defined as hours with mean global radiation exceeding 50 W/m^2. Since the CCC has no access to measurements of global radiation, an algorithm estimating the radiation has been used in the calculations of AOT40. The algorithm calculates the zenith angle given time, latitude and longitude, and uses results from a radiation model (Dahlback, 1991) to estimate the visible fraction (400-700 nm) of global radiation assuming a clear sky. Comparison with measurements shows that the model gives good estimates of the solar radiation with an inaccuracy in the magnitude of a few per cent. The total global radiation is approximately 40% higher than the visible fraction, but this will have only small influence on the calculation of AOT40 except for stations far north, since the global radiation increases above 50 W/m^2 only a short time after sunrise.

AOT40 and AOT60 for forests and agricultural crops for 2000 are shown in Tables 2.1 and 2.2 in Annex 2, and the corresponding geographical distributions of AOT40 and AOT60 in Figures 2.1-2.4. The maps of AOT40 show a general increasing gradient from west to east. The lowest values are found in Scandinavia, in the Baltic region and in the northern parts of Ireland and the United Kingdom, while the highest values are found in Austria, Hungary, Slovenia and on Malta.

The maps show that the exceedances of the critical levels are considerable. The critical level for forests (10 000 ppbh) is exceeded in larger parts of central and Eastern Europe. Several stations in central Europe had AOT40 values above 20 000 ppbh. The critical level for agricultural crops, 3000 ppbh, was in 2000 exceeded at most stations in central Europe.

To give an indication of the exceedances of short-time AOT40, the number of days contained in at least one five-day period where the AOT40 exceeds the critical level of 500 ppbh in 2000 is shown in Table 2.3. The exceedances were numerous, especially in central and southern Europe, reaching 243 days at Giordan lighthouse on Malta, 201 days at Sonnblick and 192 days at Livadi during 2000. Most of the exceedances occurred in the period April-September.

7. Seasonal variation

Monthly mean concentrations for 2000 are given in Table 3.1 in Annex 3 and monthly data capture in Table 3.2. The concentrations show a clear pattern with maximum values during spring or early summer and a minimum in winter. The seasonal variations is the net result of a number of processes such as dry deposition, photochemical loss (titration with NO_x) and formation, and varying influx from the stratosphere as well as varying background ozone concentrations.

Plots of the seasonal variations 1990–2000 are given in Figure 3.1.

The seasonal variation of ozone shows characteristics which seem to be bound by the geographical location of the station (Roemer et al., 1996). In central and Alpine Europe the variation is characterised by a broad summer maximum with high monthly means from May to August. A springtime maximum in April and May followed by a gradual decline to a minimum in November-December is found for sites in England, the Netherlands and the southern parts of Scandinavia and Finland. A springtime maximum followed by a minimum in the summer is generally found in Ireland, Scotland and the northern parts of Scandinavia and Finland.

8. Diurnal variation

In addition to the seasonal variation, ozone concentrations show a variation on a shorter time scale. The diurnal variation is a result of the variation in vertical mixing, surface dry deposition and photochemistry. Thus, coastal and mountain sites away from NO_x sources generally show the least diurnal cycles, whereas diurnal cycles will be most pronounced at inland sites in spring and summer.

The average diurnal variation of surface ozone for summer (April–September) 2000 is shown in Annex 4. In general the lowest concentrations are found in early morning and the highest in the afternoon.

The most pronounced diurnal variation is found at the rural sites in central Europe e.g. sites in Switzerland, most of the German sites and Ispra in Italy. Typical for those sites is a more marked peak in the diurnal cycle with a characteristic maximum around mid-afternoon. The pronounced diurnal peak during the summer months is due to photochemical generation of ozone during daytime as a result of higher temperature and insolation during this time of the day. However, during the night, more stable atmospheric conditions and nocturnal inversions prevent the vertical mixing and the transport of ozone from the free troposphere into the boundary layer.

A weaker diurnal variation is observed at the coastal and island stations and at the remote sites in Norway and Sweden. Mace Head, situated on the west coast of Ireland, has roughly the same average concentrations as the rural sites in central Europe but almost no diurnal variation due to remoteness from source areas and prevailing westerly winds. Zeppelinfjellet at Spitsbergen shows no diurnal variation.

Elevated sites like Schauinsland, Chaumont and Krvavec show a weaker diurnal cycle and the average concentration level is also high, due to influence of air from the free troposphere.

9. Update

The data compiled in this report represent the quality assured and quality controlled data at present. If errors are detected in the future, the data will be corrected in the database. It is important that users make certain they have access to the most recent version of the data. For the data presented here, the latest alteration was 23 July, 2002.

Complete data sets are available upon request to the CCC (e-mail: anne-gunn.hjellbrekke@nilu.no). Information about the EMEP network and measurement data is also available on the web at http://www.emep.int and http://www.nilu.no/projects/ccc/index.html.

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11. List of participating institutions

Austria	Umweltbundesamt Provincial Government of Tyrol Provincial Government of Carinthia Environment Institute Vorarlberg Provincial Government Styria Provincial Government Salzburg Provincial Government Lower Austria
Belgium	CELINE - IRCEL
Commission of the European Communities	Joint Research Center. Ispra Establishment
Czech Republic	Czech Hydrometeorological Institute
Denmark	National Environmental Research Institute
Finland	Finnish Meteorological Institute
France	l' Ecole des Mines de Douai Laboratories Wolff
Germany	Umweltbundesamt
Greece	Aristotle University of Thessaloniki
Hungary	Institute for Atmospheric Physics, Dep. for Air Chemistry
Italy	C.N.R. Istituto Inquinamento Atmosferico
Latvia	Latvian Hydrometeorological Agency
Lithuania	Institute of Physics
Netherlands	National Institute for Public Health and Environmental Protection (RIVM)
Norway	Norwegian Institute for Air Research (NILU)
Poland	Institute of Meteorology and Water Management Institute of Environmental Protection
Portugal	Ministério do ambiente e recursos naturais
Russian Federation	Institute of Global Climate and Ecology
Slovakia	Slovak Hydrometeorological Institute
Slovenia	Hydrometeorological Institute of Slovenia
Spain	Dirección General de Calidad y Evaluacíon Ambiental
Sweden	Swedish Environmental Research Institute (IVL)
Switzerland	Swiss Federal Laboratory of Testing Materials and Research (EMPA)
United Kingdom	AEA Technology

Annex 1

Concentration summaries and episodes, tables and figures

Table 1.1: Number of hours (h) and days (d) exceeding 120, 150, 180 and 200 μg/m^3 and maximum concentrations in 2000.

Code	Station	Total		>120		>150		>180		>200		Max concentration	
		hours	days	hours	days	hours	days	hours	days	hours	days	μg/m^3	date
AT02	Illmitz	8395	365	620	101	107	24	20	8	3	1	206	16.8.0
AT04	Koloman	8359	366	494	60	25	4	0	0	0	0	179	22.6.0
AT05	Vorhegg	8336	366	567	74	138	23	27	6	7	2	215	22.6.0
AT34	Sonnblick	8445	366	1452	138	31	7	0	0	0	0	166	23.6.0
AT30	Pillersdorf	8382	366	547	78	96	21	15	6	1	1	204	20.6.0
AT32	Sulzberg	8607	362	669	76	71	15	0	0	0	0	173	21.6.0
AT33	Stolzalpe	8069	354	233	46	10	5	0	0	0	0	160	20.6.0
AT37	Zillertalen Alpen	8582	363	952	93	24	9	0	0	0	0	156	27.5.0
AT38	Gerlitzen	7560	329	1419	116	174	26	15	4	0	0	196	22.6.0
AT40	Masenberg	8360	366	845	83	59	10	0	0	0	0	180	22.6.0
AT41	Haunsberg	8714	365	476	61	54	10	3	1	0	0	186	22.6.0
AT42	Heidenreichstein	8208	360	414	59	51	10	10	2	1	1	207	22.6.0
AT43	Forsthof	8400	366	505	62	55	12	4	2	0	0	193	15.9.0
AT44	Graz Platte	8667	364	1165	103	201	31	5	2	0	0	187	22.6.0
AT45	Dunkelsteinerwald	8327	363	360	63	58	15	4	4	0	0	192	16.8.0
AT46	Gaenserndorf	8512	365	543	88	88	22	12	3	6	2	232	22.6.0
AT47	Stixneusiedl	8395	366	519	82	61	16	8	3	0	0	194	16.8.0
BE32	Eupen	8316	357	132	24	10	3	0	0	0	0	176	12.8.0
BE35	Vezin	8366	359	68	13	4	2	0	0	0	0	159	14.5.0
BE01	Offagne	8112	357	98	21	0	0	0	0	0	0	144	8.6.0
CH02	Payerne	8147	363	262	55	13	4	0	0	0	0	174	20.6.0
CH03	Taenikon	8316	366	307	58	30	8	0	0	0	0	173	14.8.0
CH04	Chaumont	8139	361	550	63	38	8	0	0	0	0	175	20.6.0
CH05	Rigi	8210	366	636	78	77	17	14	4	5	1	210	20.6.0
CZ01	Svratouch	8686	366	501	63	46	6	3	2	0	0	183	21.6.0
CZ03	Kosetice	8779	366	369	53	23	4	4	1	0	0	193	22.6.0
DE01	Westerland	8589	367	90	15	25	3	5	2	0	0	192	19.6.0
DE02	Waldhof	8086	367	257	37	80	13	16	4	0	0	197	14.8.0
DE03	Schauinsland	8472	367	648	72	98	19	16	3	4	1	221	20.6.0
DE04	Deuselbach	6500	298	286	40	62	10	12	4	1	1	233	20.6.0

Table 1.1, cont.

Code	Station	Total		>120		>150		>180		>200		Max concentration	
		hours	days	hours	days	hours	days	hours	days	hours	days	µg/m^3	date
DE05	Brotjacklriegel	7962	348	602	62	77	9	0	0	0	0	176	21.6.0
DE07	Neuglobsow	8257	363	295	42	93	14	20	3	2	1	221	21.6.0
DE08	Schmücke	8420	367	577	52	87	11	7	3	0	0	200	21.6.0
DE09	Zingst	8662	367	75	13	38	4	18	2	14	2	229	20.6.0
DE12	Bassum	8400	367	122	19	18	6	0	0	0	0	177	20.6.0
DE17	Ansbach	7621	340	252	42	32	7	1	1	0	0	181	21.6.0
DE26	Ueckermünde	8415	367	149	22	42	5	9	2	1	1	202	17.5.0
DE35	Lückendorf	8020	354	371	41	55	12	6	2	0	0	195	21.6.0
DE39	Aukrug	8088	354	53	8	21	4	0	0	0	0	178	16.5.0
DK31	Ulborg	8494	357	115	14	39	4	13	2	6	1	217	19.6.0
DK32	Frederiksborg	8522	359	36	6	19	2	6	2	0	0	194	20.6.0
EE09	Lahemaa	8736	366	77	16	2	1	0	0	0	0	158	22.6.0
EE11	Vilsandi	8326	364	189	34	7	3	0	0	0	0	158	11.6.0
ES01	San Pablo	3732	171	163	32	2	1	0	0	0	0	170	12.6.0
ES03	Tortosa	3612	165	10	2	0	0	0	0	0	0	147	12.3.0
ES04	Logroño	8067	364	156	40	5	3	0	0	0	0	165	19.7.0
ES05	Noia	3583	159	101	21	1	1	0	0	0	0	153	11.3.0
ES07	Viznar	8189	365	295	74	5	2	0	0	0	0	154	14.8.0
ES08	Niembro	8286	366	43	9	3	1	0	0	0	0	153	18.6.0
ES09	Campisabalos	7784	366	211	40	19	9	0	0	0	0	180	20.7.0
ES10	Cabo de Creus	8213	366	818	113	59	16	5	3	1	1	206	8.6.0
ES11	Barcarrota	8147	363	75	19	1	1	0	0	0	0	161	9.8.0
ES12	Zarra	8335	366	314	79	10	7	0	0	0	0	167	22.9.0
ES13	Penausende	3457	153	266	30	30	6	0	0	0	0	169	10.8.0
ES14	Els Torms	1348	60	0	0	0	0	0	0	0	0	79	23.11.0
ES15	Risco Llano	1278	60	0	0	0	0	0	0	0	0	114	29.12.0
FI09	Uto	8696	366	2	1	0	0	0	0	0	0	122	23.4.0
FI17	Virolahti	8685	366	1	1	0	0	0	0	0	0	122	20.4.0
FI22	Oulanka	8737	366	0	0	0	0	0	0	0	0	115	10.5.0
FI37	Ahtari II	8731	366	15	4	0	0	0	0	0	0	148	11.6.0

Table 1.1, cont.

Code	Station	Total		>120		>150		>180		>200		Max concentration	
		hours	days	hours	days	hours	days	hours	days	hours	days	μg/m³	date
FR09	Revin	8698	366	51	14	0	0	0	0	0	0	143	8.6.0
FR10	Morvan	8185	347	61	10	2	1	0	0	0	0	167	19.6.0
FR12	Iraty	7655	329	688	85	37	12	0	0	0	0	172	22.7.0
FR13	Peyrusse Vieille	8542	361	0	0	0	0	0	0	0	0	113	8.6.0
FR14	Montandon	8324	358	47	16	3	1	0	0	0	0	163	19.6.0
FR08A	Donon	8517	364	367	45	32	12	1	1	0	0	181	10.5.0
FR08B	Donon	8528	364	384	47	35	13	0	0	0	0	179	13.6.0
FR08C	Donon	3062	130	146	18	14	5	0	0	0	0	169	25.8.0
FR08D	Donon	8610	364	467	55	56	16	1	1	0	0	191	10.5.0
GB02	Eskdalemuir	8678	364	7	4	0	0	0	0	0	0	130	14.5.0
GB06	Lough Navar	7933	335	17	4	0	0	0	0	0	0	144	7.5.0
GB13	Yarner Wood	7141	303	41	9	0	0	0	0	0	0	150	25.8.0
GB14	High Muffles	8293	352	44	12	7	3	0	0	0	0	164	19.6.0
GB15	Strath Vaich	8459	358	13	3	0	0	0	0	0	0	138	7.5.0
GB31	Aston Hill	7956	336	40	10	0	0	0	0	0	0	142	18.6.0
GB32	Bottesford	8723	366	31	7	4	2	0	0	0	0	176	18.6.0
GB33	Bush	8161	348	3	2	0	0	0	0	0	0	128	19.6.0
GB34	Glazebury	6657	284	18	6	0	0	0	0	0	0	142	9.5.0
GB36	Harwell	8567	364	26	7	0	0	0	0	0	0	148	24.8.0
GB37	Ladybower	8381	359	22	4	0	0	0	0	0	0	150	18.6.0
GB38	Lullington Heath	7934	345	71	20	3	2	0	0	0	0	164	14.5.0
GB39	Sibton	8042	344	23	8	2	1	0	0	0	0	154	18.6.0
GB43	Narberth	6349	278	26	6	0	0	0	0	0	0	144	7.5.0
GB44	Somerton	8112	346	62	15	11	3	0	0	0	0	164	24.8.0
GB45	Wicken Fen	6695	287	36	8	6	2	2	1	0	0	186	19.6.0
GR03	Livadi	5299	251	1138	129	157	49	20	10	4	2	232	15.6.0
HU02	K-puszta	8577	365	843	116	90	21	2	1	0	0	191	23.8.0
IE31	Mace Head	8525	359	2	1	0	0	0	0	0	0	124	10.5.0
IT01	Montelibretti	7596	323	510	89	194	56	53	25	17	10	257	6.7.0
IT04	Ispra	8540	362	626	122	267	60	103	33	28	12	252	6.7.0

Table 1.1, cont.

Code	Station	Total		>120		>150		>180		>200		Max concentration	
		hours	days	hours	days	hours	days	hours	days	hours	days	µg/m^3	date
LT15	Preila	7452	317	38	11	12	2	0	0	0	0	179	20.6.0
LV10	Rucava	8222	347	15	3	0	0	0	0	0	0	150	30.8.0
MT01	Giordan lighthouse	8750	366	1704	153	44	18	1	1	0	0	183	22.8.0
NL09	Kollumerwaard	8589	364	58	7	27	5	1	1	0	0	181	9.6.0
NL10	Vredepeel	7875	357	77	15	5	2	0	0	0	0	164	14.5.0
NO01	Birkenes	8756	366	42	8	4	2	0	0	0	0	154	20.6.0
NO15	Tustervatn	8757	366	28	4	0	0	0	0	0	0	138	17.5.0
NO39	Kaarvatn	8776	366	86	7	7	2	0	0	0	0	163	17.5.0
NO41	Osen	8731	366	33	5	0	0	0	0	0	0	137	16.5.0
NO42	Zeppelinfjellet	7610	319	0	0	0	0	0	0	0	0	95	18.5.0
NO43	Prestebakke	8683	364	89	11	19	3	0	0	0	0	172	20.6.0
NO45	Jeloya	8097	339	35	5	0	0	0	0	0	0	140	16.5.0
NO48	Voss	8763	366	21	5	0	0	0	0	0	0	141	16.5.0
NO52	Karmoy	8410	354	54	7	6	2	0	0	0	0	162	16.5.0
NO55	Karasjok	8725	366	1	1	0	0	0	0	0	0	122	9.5.0
NO56	Hurdal	8625	361	59	10	4	2	0	0	0	0	168	16.5.0
PL02	Jarczew	7750	326	259	47	10	5	0	0	0	0	175	18.5.0
PL03	Sniezka	8777	366	1210	105	258	28	54	5	24	3	234	21.6.0
PL04	Leba	8617	360	176	25	19	3	5	2	0	0	193	21.6.0
PL05	Diabla Gora	8578	366	239	38	21	5	0	0	0	0	161	21.6.0
PT04	Monte Velho	5882	263	121	37	2	1	0	0	0	0	157	14.6.0
RU16	Shepeljovo	5661	263	1	1	0	0	0	0	0	0	132	22.6.0
RU18	Danki	7039	301	0	0	0	0	0	0	0	0	102	25.4.0
SE02	Rorvik	8762	366	86	13	29	4	10	2	3	1	214	21.6.0
SE11	Vavihill	8666	364	100	15	36	4	13	2	4	1	220	20.6.0
SE12	Aspvreten	7379	336	17	6	3	1	0	0	0	0	160	20.6.0
SE13	Esrange	8772	366	7	1	0	0	0	0	0	0	133	9.5.0

Table 1.1, cont.

Code	Station	Total		>120		>150		>180		>200		Max concentration	
		hours	days	hours	days	hours	days	hours	days	hours	days	µg/m^3	date
SE32	Norra Kvill	8766	366	102	13	1	1	0	0	0	0	157	20.6.0
SE35	Vindeln	8592	361	7	2	0	0	0	0	0	0	130	9.5.0
SI08	Iskrba	7933	360	619	91	97	18	15	4	2	1	211	20.6.0
SI31	Zavodnje	8045	365	95	15	1	1	0	0	0	0	152	20.8.0
SI32	Krvavec	8344	357	1489	122	186	30	13	5	0	0	194	23.6.0
SI33	Kovk	8022	364	742	81	118	21	6	2	1	1	208	21.6.0
SK02	Chopok	6434	288	316	34	22	6	0	0	0	0	179	5.8.0
SK04	Stara-Lesna	8269	361	205	37	25	7	0	0	0	0	171	3.8.0
SK06	Starina	8094	342	101	26	16	5	0	0	0	0	161	23.6.0
SK07	Topolniky	7993	339	535	65	193	35	18	8	1	1	201	12.5.0

Table 1.2: Percentiles of hourly ozone values April–September 2000.

Code	Station	25%	50%	75%	90%	95%	98%	99%	Data capture
AT02	Illmitz	61.0	83.0	106.5	128.0	139.0	156.0	169.0	95.1
AT04	Koloman	80.0	95.0	110.0	122.4	130.0	139.0	144.0	95.3
AT05	Vorhegg	71.0	89.0	108.0	126.0	141.0	161.6	171.3	94.9
AT30	Pillersdorf	66.0	85.0	105.0	126.0	139.0	152.0	165.1	95.5
AT32	Sulzberg	81.0	96.0	111.0	127.0	136.0	148.0	154.8	98.4
AT33	Stolzalpe	62.0	82.0	99.0	113.0	121.0	134.0	140.0	95.4
AT34	Sonnblick	104.0	115.0	124.0	132.0	139.0	144.0	149.0	95.4
AT37	Zillertalen Alpen	94.0	106.0	118.0	129.0	134.0	141.0	147.0	99.0
AT38	Gerlitzen	102.0	113.0	126.0	140.0	148.0	159.0	166.0	95.4
AT40	Masenberg	85.0	100.0	117.0	130.0	139.0	148.0	155.2	95.1
AT41	Haunsberg	72.0	88.0	106.0	122.0	133.0	144.0	154.0	98.4
AT42	Heidenreichstein	54.0	77.0	102.0	121.0	133.0	144.0	154.0	91.2
AT43	Forsthof	66.0	86.0	105.0	125.0	134.0	143.0	156.0	95.6
AT44	Graz Platte	83.0	101.0	122.0	139.0	149.0	161.0	168.0	99.0
AT45	Dunkelsteinerwald	50.0	70.0	95.0	118.0	131.0	146.0	157.0	93.4
AT46	Gaenserndorf	53.0	75.0	101.0	126.0	139.0	151.0	158.0	96.7
AT47	Stixneusiedl	59.0	79.0	103.0	124.0	134.0	147.0	157.0	95.5
BE01	Offagne	46.0	62.0	81.0	98.0	110.0	122.0	128.0	93.0
BE32	Eupen	41.0	59.0	81.0	99.0	113.0	126.0	133.3	95.0
BE35	Vezin	25.0	48.0	72.0	89.0	101.0	116.0	127.9	98.2
CH02	Payerne	42.0	65.0	91.0	113.0	124.0	136.0	142.9	93.6
CH03	Taenikon	45.0	65.0	88.0	113.0	129.0	140.7	148.0	94.9
CH04	Chaumont	80.0	92.5	109.0	125.0	133.0	144.0	150.0	91.0
CH05	Rigi	80.0	96.0	111.0	127.0	137.0	150.0	158.0	92.8
CZ01	Svratouch	68.0	87.0	106.0	122.0	131.0	143.0	151.0	98.6
CZ03	Kosetice	60.0	79.0	100.0	118.0	127.0	136.0	143.0	99.9
DE01	Westerland	62.0	75.0	88.0	101.0	109.0	122.0	132.6	98.7
DE02	Waldhof	45.0	65.0	86.0	110.0	129.0	149.0	164.8	91.6
DE03	Schauinsland	82.0	97.0	112.0	128.0	137.0	152.0	160.0	96.7
DE04	Deuselbach	57.0	75.0	94.0	114.0	125.0	144.0	160.2	90.7
DE05	Brotjacklriegel	75.0	93.0	110.0	127.0	137.0	149.0	155.0	94.4
DE07	Neuglobsow	42.0	65.0	87.0	110.0	128.0	154.7	168.0	92.6
DE08	Schmücke	69.0	85.0	106.0	128.0	141.0	151.0	159.0	95.9
DE09	Zingst	54.0	68.0	83.0	94.0	104.0	118.0	141.0	99.0
DE12	Bassum	34.0	51.0	70.0	90.0	106.0	131.0	145.0	95.8
DE17	Ansbach	39.0	62.0	88.0	111.0	126.0	139.0	149.0	85.2
DE26	Ueckermünde	48.0	63.0	81.0	103.0	114.0	132.8	150.0	95.8
DE35	Lückendorf	56.0	74.0	98.0	119.0	133.0	145.0	155.0	89.6
DE39	Aukrug	35.0	50.0	64.0	77.0	92.0	111.0	131.0	88.6
DK31	Ulborg	53.0	66.0	79.0	92.0	103.0	127.0	147.0	98.0
DK32	Frederiksborg	43.0	58.0	73.0	87.0	95.0	111.0	119.0	98.8
EE09	Lahemaa	45.0	66.0	83.0	98.0	107.0	118.0	124.9	99.2
EE11	Vilsandi	73.0	86.0	99.0	111.0	119.0	130.0	136.7	93.9
ES01	San Pablo	88.0	97.0	106.0	115.0	121.0	130.0	138.0	39.8
ES03	Tortosa	53.0	70.0	83.0	93.0	98.0	103.0	107.0	36.9
ES04	Logroño	52.0	69.0	88.0	106.0	117.0	128.0	135.0	91.7
ES05	Noia	88.0	98.0	106.0	111.0	114.7	119.0	122.0	34.3
ES07	Viznar	77.0	89.0	103.0	116.0	124.0	133.0	140.0	94.2
ES08	Niembro	51.0	63.0	76.0	88.0	95.0	108.0	121.5	94.5
ES09	Campisabalos	68.0	82.0	95.0	110.0	121.0	133.0	140.7	87.2
ES10	Cabo de Creus	93.0	106.0	117.0	128.0	136.0	146.0	153.0	94.4
ES11	Barcarrota	51.0	67.0	82.0	98.0	109.0	118.0	125.0	94.1
ES12	Zarra	78.0	90.0	104.0	117.0	124.0	131.0	137.0	94.9
ES13	Penausende	75.0	92.0	112.0	133.0	141.0	151.4	159.4	31.4
FI09	Uto	62.0	71.0	80.0	90.0	96.0	103.0	107.0	98.8
FI17	Virolahti	39.0	59.0	75.0	86.0	93.0	104.0	110.0	98.6
FI22	Oulanka	48.0	61.0	77.0	90.0	96.0	101.9	105.0	99.2
FI37	Ahtari II	47.0	62.0	77.0	89.0	96.0	104.0	110.0	99.1
FR08A	Donon	67.0	82.0	99.0	118.0	128.0	140.0	147.0	97.8
FR08B	Donon	68.0	83.0	100.0	118.0	129.0	141.0	148.0	98.0
FR08C	Donon	69.0	82.0	101.0	118.0	129.0	138.8	147.9	39.0
FR08D	Donon	72.0	86.0	103.0	122.0	132.0	143.0	152.5	99.1
FR09	Revin	46.0	61.0	77.0	94.0	105.0	117.0	121.4	99.2
FR10	Morvan	51.0	68.0	84.2	100.9	107.0	118.0	123.0	97.2
FR12	Iraty	83.0	98.0	113.0	127.0	135.0	144.0	149.3	92.6

Table 1.2, cont.

Code	Station	25%	50%	75%	90%	95%	98%	99%	Data capture
FR13	Peyrusse Vieille	47.0	61.0	73.0	84.0	90.0	97.0	100.0	95.0
FR14	Montandon	48.0	63.0	79.0	95.0	106.0	117.0	122.0	95.8
GB02	Eskdalemuir	34.0	48.0	64.0	76.0	84.0	94.0	103.7	98.3
GB06	Lough Navar	30.0	48.0	64.0	78.0	84.0	92.0	106.0	98.3
GB13	Yarner Wood	44.0	58.0	72.0	88.0	96.0	109.9	122.0	87.7
GB14	High Muffles	46.0	60.0	78.0	92.0	98.0	112.0	122.0	94.6
GB15	Strath Vaich	52.0	62.0	76.0	88.0	94.0	100.0	110.0	95.7
GB31	Aston Hill	50.0	62.0	76.0	88.0	96.0	108.0	120.0	98.5
GB32	Bottesford	30.0	50.0	68.0	82.0	90.0	104.0	116.0	99.5
GB33	Bush	42.0	55.0	70.0	82.0	86.0	92.0	98.0	98.8
GB34	Glazebury	22.0	46.0	64.0	80.0	86.0	106.8	114.4	72.4
GB36	Harwell	38.0	54.0	70.0	84.0	94.0	104.0	117.0	96.7
GB37	Ladybower	40.0	54.0	68.0	82.0	88.0	96.0	106.8	94.7
GB38	Lullington Heath	46.0	60.0	76.0	92.0	102.6	118.0	124.0	94.1
GB39	Sibton	38.0	56.0	72.0	86.0	94.0	106.0	114.0	95.9
GB43	Narberth	58.0	68.0	82.0	90.0	98.0	106.8	118.0	64.5
GB44	Somerton	44.0	62.0	78.0	92.0	102.0	117.6	126.0	98.2
GB45	Wicken Fen	36.0	56.0	72.0	86.0	94.0	116.0	126.4	54.2
GR03	Livadi	92.0	109.0	126.0	141.0	150.0	162.0	172.0	79.7
HU02	K-puszta	60.0	85.0	113.0	134.0	141.4	151.0	156.0	97.2
IE31	Mace Head	58.0	68.0	82.0	90.0	96.0	104.0	106.0	94.9
IT01	Montelibretti	17.0	51.0	96.0	133.0	151.0	171.0	186.0	85.6
IT04	Ispra	34.0	65.0	98.0	130.0	157.0	184.0	193.0	98.5
LT15	Preila	60.0	76.0	89.0	98.0	104.0	112.0	120.0	95.0
LV10	Rucava	40.0	56.5	70.0	82.0	90.0	99.0	106.0	91.7
MT01	Giordan lighthouse	100.0	113.0	124.0	132.0	138.0	145.0	150.2	99.6
NL09	Kollumerwaard	35.0	53.0	69.0	82.0	89.0	108.1	130.6	98.9
NL10	Vredepeel	19.0	38.0	58.0	76.0	93.0	119.0	131.0	93.4
NO01	Birkenes	40.0	56.0	70.0	84.0	92.0	108.0	120.0	99.7
NO15	Tustervatn	51.0	64.0	86.0	96.0	102.0	108.0	114.0	99.7
NO39	Kaarvatn	37.0	57.0	80.0	98.0	107.0	118.3	134.0	99.9
NO41	Osen	36.0	55.0	75.0	89.0	96.0	107.0	118.0	99.4
NO42	Zeppelinfjellet	44.0	52.0	61.0	71.0	78.0	83.0	85.0	97.1
NO43	Prestebakke	48.0	64.0	78.0	92.0	102.0	122.0	138.0	98.1
NO45	Jeloya	45.0	59.0	74.0	86.0	92.0	102.0	114.0	99.9
NO48	Voss	44.0	60.0	77.0	93.0	99.0	106.0	110.0	99.8
NO52	Karmoy	56.0	66.0	79.0	90.0	97.0	112.8	126.0	99.2
NO55	Karasjok	48.0	60.0	78.0	90.0	94.0	98.0	100.0	99.2
NO56	Hurdal	46.0	62.0	80.0	95.0	104.0	115.0	124.0	99.6
PL02	Jarczew	42.0	64.0	89.0	112.0	124.0	135.0	140.0	98.8
PL03	Sniezka	92.0	107.0	122.0	140.5	154.0	167.0	185.3	99.8
PL04	Leba	53.0	71.0	88.0	102.0	116.0	134.0	140.0	100.0
PL05	Diabla Gora	50.0	72.0	92.0	110.0	122.0	132.0	140.0	97.7
PT04	Monte Velho	45.0	67.0	87.0	100.0	110.0	120.0	128.0	56.2
RU16	Shepeljovo	46.0	60.0	72.0	82.0	88.0	94.0	102.0	70.9
RU18	Danki	34.0	46.0	58.0	66.0	74.0	84.0	90.0	97.6
SE02	Rorvik	52.0	68.0	82.0	96.0	105.0	120.0	139.0	99.7
SE11	Vavihill	52.0	67.0	83.0	98.0	109.0	123.0	143.0	99.2
SE12	Aspvreten	45.0	66.0	82.0	94.0	102.0	110.0	114.0	90.7
SE13	Esrange	50.0	63.0	81.0	92.0	95.0	100.0	104.0	99.9
SE32	Norra Kvill	54.0	67.0	82.5	96.0	107.0	122.4	131.2	99.8
SE35	Vindeln	36.0	56.0	76.0	89.0	96.0	103.0	106.1	99.9
SI08	Iskrba	25.0	75.0	108.0	127.0	139.0	152.0	160.0	92.2
SI31	Zavodnje	56.0	71.0	86.0	100.0	111.0	122.0	129.0	91.1
SI32	Krvavec	98.0	111.0	126.0	140.0	148.0	162.0	170.0	97.8
SI33	Kovk	78.0	96.0	114.0	131.0	141.0	155.0	161.0	91.3
SK02	Chopok	64.0	81.0	104.0	121.0	133.0	143.0	147.0	70.5
SK04	Stara-Lesna	39.0	66.0	92.0	111.0	121.0	133.4	146.0	92.9
SK06	Starina	51.0	69.0	86.0	103.0	112.0	123.0	130.0	93.4
SK07	Topolniky	42.0	63.0	90.0	127.0	147.0	166.0	174.0	92.2

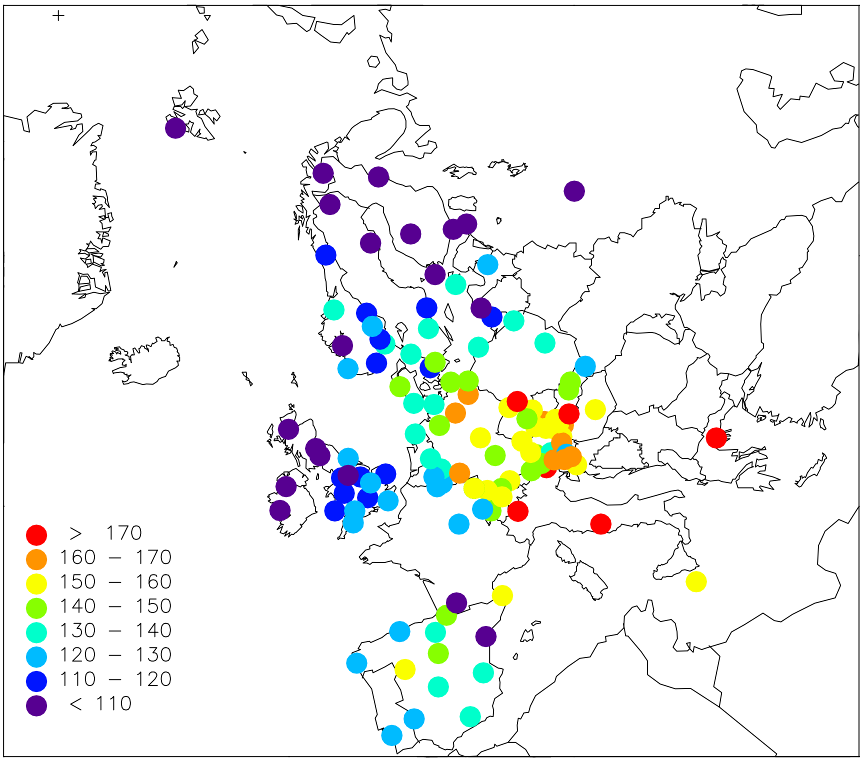


Figure 1.1: Ozone April–September 2000. 99-percentiles (µg/m³).

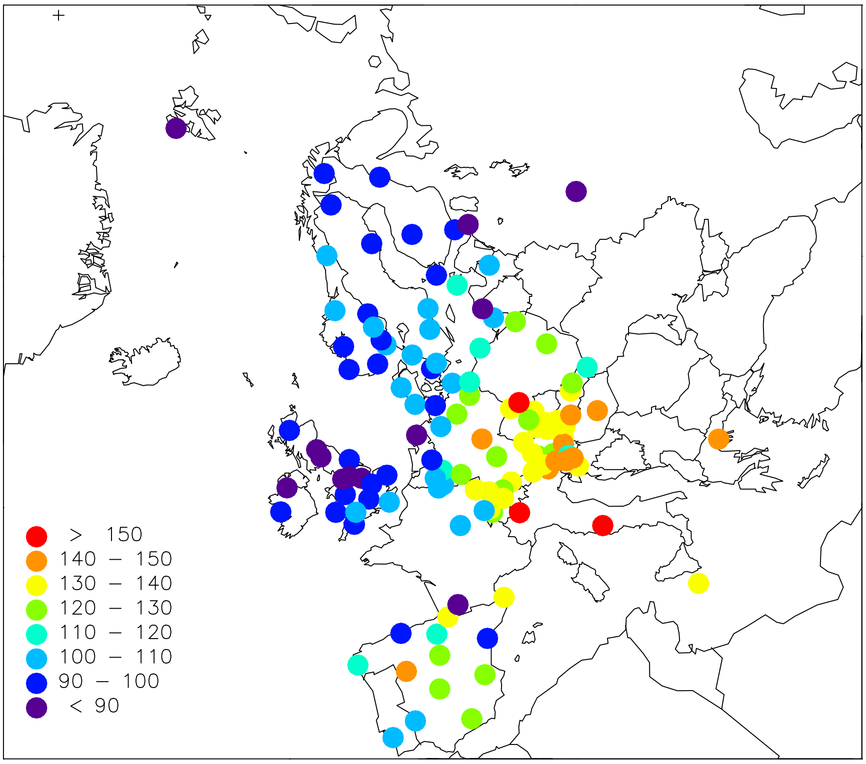


Figure 1.2: Ozone April–September 2000. 95-percentiles (µg/m³).

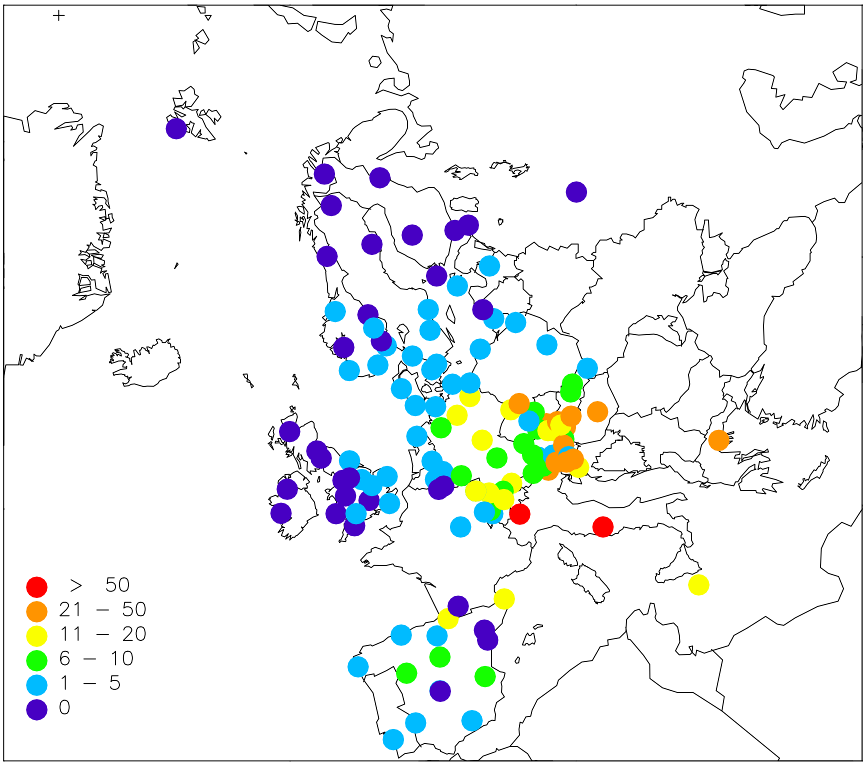


Figure 1.3: Number of exceedances of the threshold value of 150 μg/m³. (Unit: number of days).

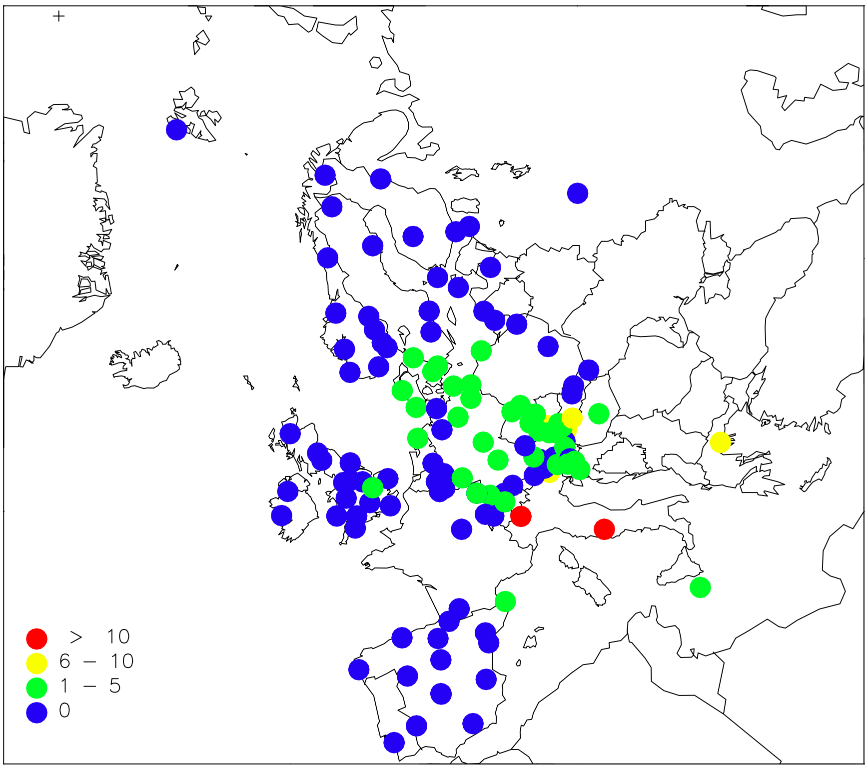


Figure 1.4: Number of exceedances of the threshold value of 180 μg/m³. (Unit: number of days).

Annex 2

AOT40 and AOT60, figures and tables

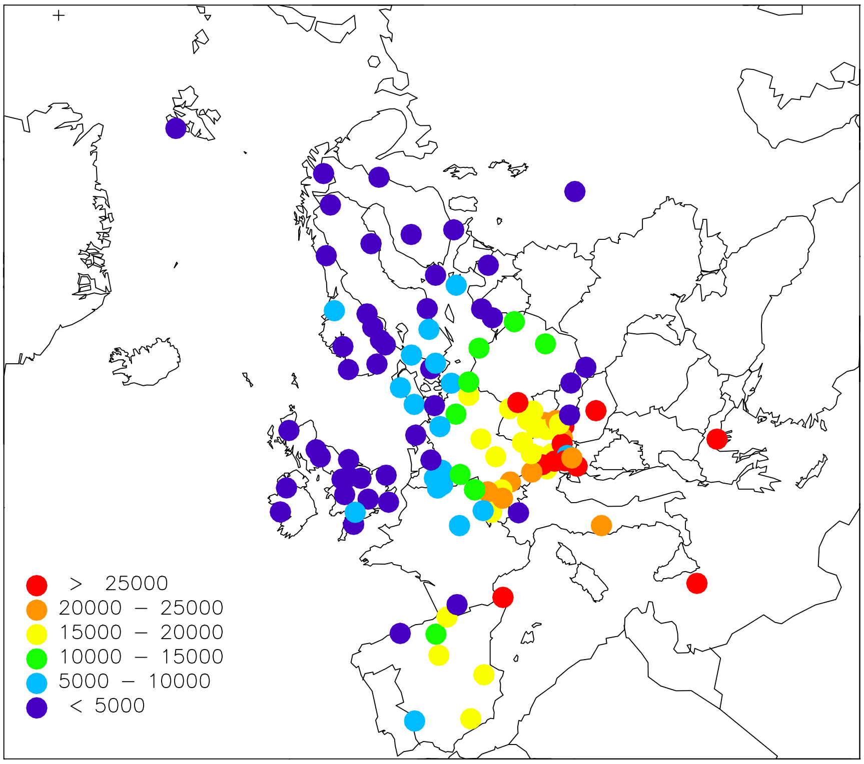


Figure 2.1: AOT40 (ppbh) April–September 2000 (daylight hours).

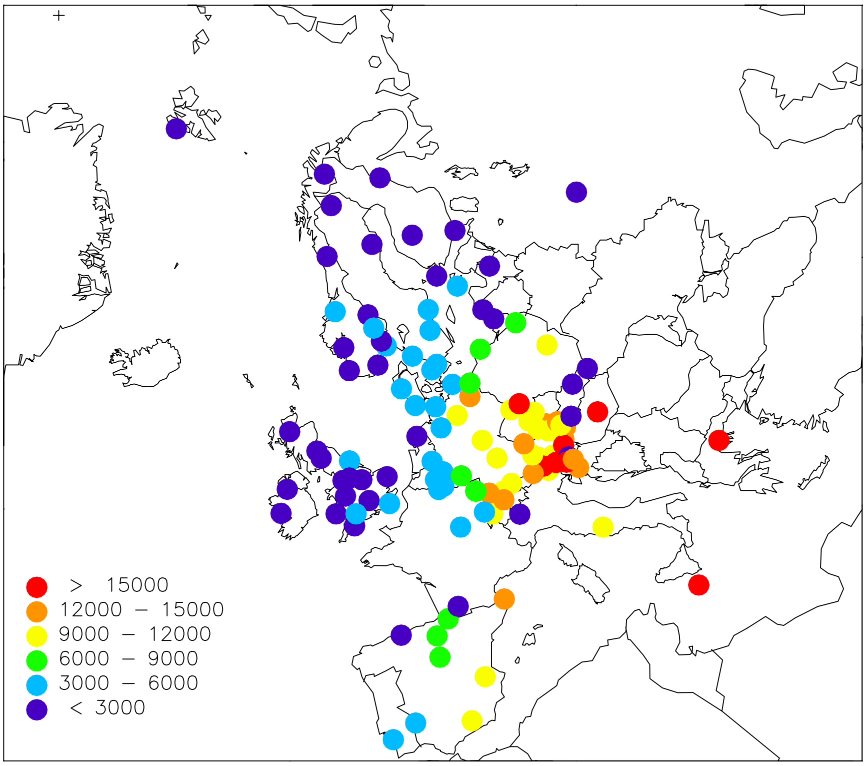


Figure 2.2: AOT40 (ppbh) May, June and July 2000 (daylight hours).

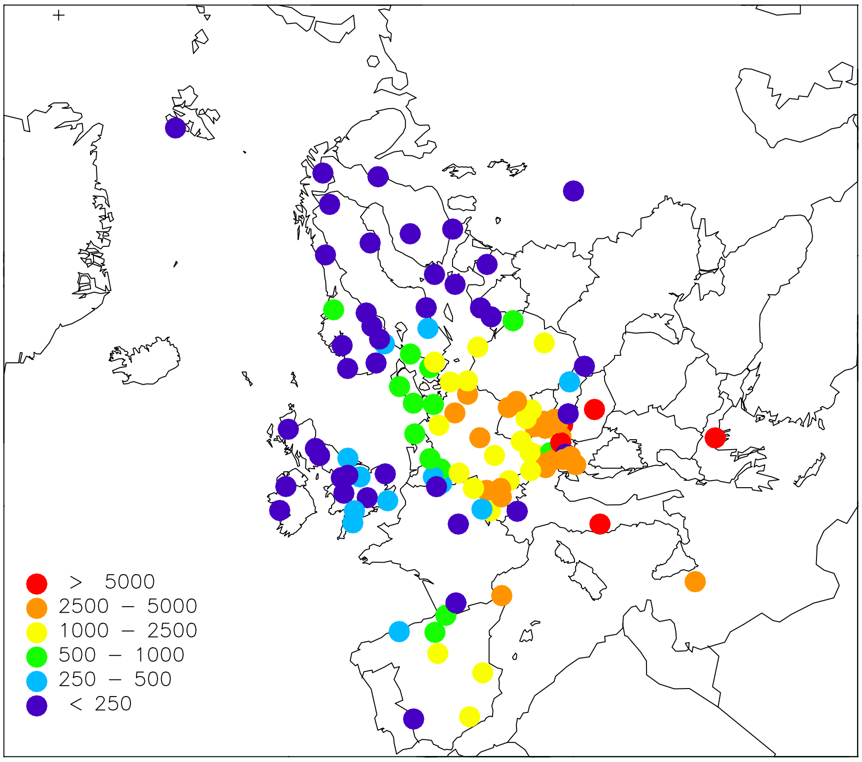


Figure 2.3: AOT60 (ppbh) April-September 2000 (daylight hours).

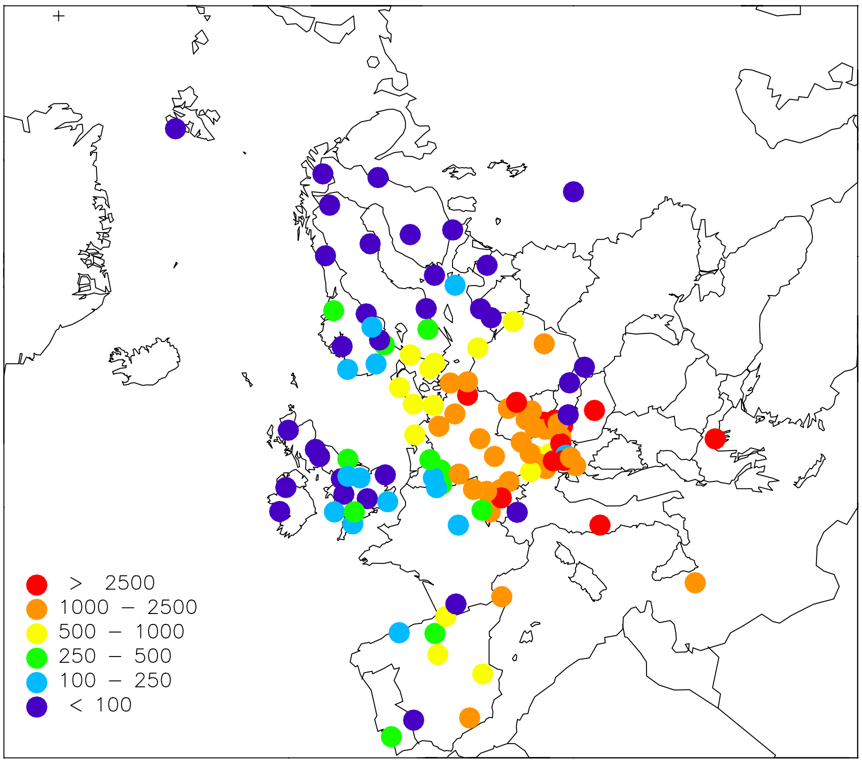


Figure 2.4: AOT60 (ppbh) May, June and July 2000 (daylight hours).

Table 2.1: AOT40 and AOT60 April–September 2000 (daylight hours).

Code	Station	AOT40	AOT40 corrected	AOT60	AOT60 corrected	Data capture
AT02	Illmitz	23461	25057	4913	5247	93.6
AT04	Koloman	16120	17492	1294	1404	92.2
AT05	Vorhegg	17892	19531	2714	2963	91.6
AT30	Pillersdorf	20783	22043	4058	4304	94.3
AT32	Sulzberg	19760	20047	2402	2437	98.6
AT33	Stolzalpe	14348	15668	825	901	91.6
AT34	Sonnblick	31646	33778	2484	2652	93.7
AT37	Zillertalen Alpen	24553	24822	1570	1587	98.9
AT38	Gerlitzen	31338	32944	3971	4175	95.1
AT40	Masenberg	23331	24597	2990	3153	94.9
AT41	Haunsberg	17142	17387	2155	2186	98.6
AT42	Heidenreichstein	16842	18507	2440	2682	91.0
AT43	Forsthof	15654	16715	2090	2232	93.7
AT44	Graz Platte	26232	26515	5306	5364	98.9
AT45	Dunkelsteinerwald	15680	16881	2672	2877	92.9
AT46	Gaenserndorf	21218	21964	4378	4531	96.6
AT47	Stixneusiedl	18688	19662	3152	3316	95.0
BE01	Offagne	7636	8250	374	404	92.6
BE32	Eupen	7938	8349	720	757	95.1
BE35	Vezin	5848	5993	432	443	97.6
CH02	Payerne	14526	15493	1860	1984	93.8
CH03	Taenikon	15004	15878	2606	2758	94.5
CH04	Chaumont	16808	18631	1815	2012	90.2
CH05	Rigi	20480	22145	3484	3767	92.5
CZ01	Svratouch	18028	18520	2017	2072	97.3
CZ03	Kosetice	17190	17214	1736	1738	99.9
DE01	Westerland	8226	8409	662	677	97.8
DE02	Waldhof	13660	13746	3012	3032	99.4
DE03	Schauinsland	20930	21699	2880	2986	96.5
DE04	Deuselbach	13284	14791	2015	2244	89.8
DE05	Brotjacklriegel	18281	19351	2301	2436	94.5
DE07	Neuglobsow	14312	15646	3238	3539	91.5
DE08	SchmÆcke	17114	17916	2530	2648	95.5
DE09	Zingst	7090	7172	1094	1106	98.8
DE12	Bassum	6633	6973	1150	1210	95.1
DE17	Ansbach	13399	15657	1930	2256	85.6
DE26	UeckermÆnde	9643	10115	1406	1474	95.3
DE35	LÆckendorf	14458	16359	2418	2736	88.4
DE39	Aukrug	3396	3874	630	718	87.6
DK31	Ulborg	5681	5817	888	910	97.7
DK32	Frederiksborg	3838	3894	556	564	98.6
EE09	Lahemaa	3997	4044	116	118	98.8
EE11	Vilsandi	7534	7773	164	170	96.9
ES01	San Pablo	7698	18297	307	730	42.1
ES03	Tortosa	2234	5738	0	0	38.9
ES04	Logrono	11688	12215	774	808	95.7
ES05	Noia	6542	18439	27	76	35.5
ES07	Viznar	18116	18579	1315	1349	97.5
ES08	Niembro	3511	3596	264	270	97.6
ES09	Campisabalos	14148	15613	1108	1223	90.6
ES10	Cabo de Creus	28577	29316	2780	2852	97.5
ES11	Barcarrota	7269	7404	234	238	98.2
ES12	Zarra	19280	19645	1147	1169	98.1
ES13	Penausende	7310	24211	1279	4236	30.2
FI09	Uto	1459	1486	0	0	98.2
FI17	Virolahti	1727	1764	0	0	97.9
FI22	Oulanka	1578	1596	0	0	98.9
FI37	Ahtari II	2031	2056	39	40	98.8
FR08A	Donon	11906	12072	1012	1026	98.6
FR08B	Donon	13042	13211	1266	1283	98.7
FR08C	Donon	4526	12286	382	1038	36.8
FR08D	Donon	14602	14748	1542	1558	99.0
FR09	Revin	5876	5971	143	145	98.4
FR10	Morvan	7073	7285	182	187	97.1

Table 2.1, cont.

Code	Station	AOT40	AOT40 corrected	AOT60	AOT60 corrected	Data capture
FR12	Iraty	16004	17176	810	870	93.2
FR13	Peyrusse Vieille	2103	2220	0	0	94.7
FR14	Montandon	6018	6232	253	262	96.6
GB02	Eskdalemuir	1472	1496	22	22	98.4
GB06	Lough Navar	1664	1711	81	83	97.2
GB13	Yarner Wood	3386	3839	230	261	88.2
GB14	High Muffles	3845	4051	326	343	94.9
GB15	Strath Vaich	3352	3508	65	68	95.6
GB31	Aston Hill	3142	3193	53	54	98.4
GB32	Bottesford	2930	2961	248	251	98.9
GB33	Bush	1238	1262	2	2	98.1
GB34	Glazebury	1929	2549	69	91	75.7
GB36	Harwell	3341	3468	125	130	96.3
GB37	Ladybower	1826	1940	136	144	94.1
GB38	Lullington Heath	4368	4738	241	261	92.2
GB39	Sibton	2919	3051	92	96	95.7
GB43	Narberth	2831	4237	102	153	66.8
GB44	Somerton	6152	6308	432	443	97.5
GB45	Wicken Fen	2336	4265	331	604	54.8
GR03	Livadi	34324	44514	8798	11410	77.1
HU02	K-puszta	29548	30433	6093	6275	97.1
IE31	Mace Head	3236	3371	3	3	96.0
IT01	Montelibretti	20449	23334	6549	7473	87.6
IT04	Ispra	1627	1651	30	30	98.6
LT15	Preila	3698	3908	90	95	94.6
LV10	Rucava	1230	1364	14	16	90.1
MT01	Giordan lighthouse	34558	34788	4332	4361	99.3
NL09	Kollumerwaard	3465	3501	691	698	99.0
NL10	Vredepeel	3716	4006	512	551	92.8
NO01	Birkenes	3114	3132	226	227	99.4
NO15	Tustervatn	4548	4579	56	57	99.3
NO39	Kaarvatn	6766	6783	517	518	99.8
NO41	Osen	3606	3638	96	97	99.1
NO42	Zeppelinfjellet	94	97	0	0	97.9
NO43	Prestebakke	4873	4979	471	481	97.9
NO45	Jeloya	2048	2051	51	51	99.9
NO48	Voss	3940	3952	72	72	99.7
NO52	Karmoy	3799	3830	226	228	99.2
NO55	Karasjok	2392	2399	0	0	99.7
NO56	Hurdal	4924	4951	168	169	99.5
PL02	Jarczew	14240	14453	1506	1528	98.5
PL03	Sniezka	28456	28512	4438	4447	99.8
PL04	Leba	10350	10350	1306	1306	100.0
PL05	Diabla Gora	11780	12060	954	977	97.7
PT04	Monte Velho	5145	8900	284	490	57.8
RU16	Shepeljovo	1092	1612	6	9	67.8
RU18	Danki	352	359	0	0	98.0
SE02	Rorvik	7024	7054	884	887	99.6
SE11	Vavihill	7253	7302	1032	1038	99.3
SE12	Aspvreten	4302	4752	95	105	90.5
SE13	Esrange	3002	3007	3	3	99.8
SE32	Norra Kvill	6196	6222	421	423	99.6
SE35	Vindeln	3256	3262	14	15	99.8
SI08	Iskrba	24129	25010	3955	4099	96.5
SI31	Zavodnje	4859	5147	232	245	94.4
SI32	Krvavec	30843	31614	4446	4558	97.6
SI33	Kovk	22298	23597	3378	3575	94.5
SK02	Chopok	8218	11679	792	1126	70.4
SK04	Stara-Lesna	3086	3361	236	257	91.8
SK06	Starina	1099	1181	0	0	93.0
SK07	Topolniky	2626	2856	109	119	91.9

Table 2.2: AOT40 and AOT60 May–July 2000 (daylight hours).

Code	Station	AOT40	AOT40 corrected	AOT60	AOT60 corrected	Data capture
AT02	Illmitz	13474	14535	2768	2986	92.7
AT04	Koloman	9068	9874	726	790	91.8
AT05	Vorhegg	10512	11505	1774	1941	91.4
AT30	Pillersdorf	13282	14171	3088	3294	93.7
AT32	Sulzberg	11650	11746	1660	1674	99.2
AT33	Stolzalpe	8556	9397	570	625	91.1
AT34	Sonnblick	16946	18649	1563	1720	90.9
AT37	Zillertalen Alpen	12933	13138	858	872	98.4
AT38	Gerlitzen	17318	18166	2386	2502	95.3
AT40	Masenberg	13615	14398	1964	2076	94.6
AT41	Haunsberg	10766	10766	1487	1487	100.0
AT42	Heidenreichstein	9972	11088	1708	1899	89.9
AT43	Forsthof	10170	10853	1562	1666	93.7
AT44	Graz Platte	15518	15829	3352	3420	98.0
AT45	Dunkelsteinerwald	10210	11127	2189	2386	91.8
AT46	Gaenserndorf	13109	13769	2891	3036	95.2
AT47	Stixneusiedl	11154	11683	1774	1859	95.5
BE01	Offagne	4478	4759	244	260	94.1
BE32	Eupen	4784	4940	419	433	96.8
BE35	Vezin	3552	3601	247	250	98.6
CH02	Payerne	8657	9342	1175	1268	92.7
CH03	Taenikon	9598	10122	1694	1787	94.8
CH04	Chaumont	9897	10937	1233	1362	90.5
CH05	Rigi	12093	13208	2462	2689	91.6
CZ01	Svratouch	10338	10832	1490	1562	95.4
CZ03	Kosetice	9870	9879	1228	1229	99.9
DE01	Westerland	5208	5304	642	654	98.2
DE02	Waldhof	9736	9744	2445	2447	99.9
DE03	Schauinsland	12076	12553	2052	2133	96.2
DE04	Deuselbach	7443	8258	1441	1599	90.1
DE05	Brotjacklriegel	11859	12151	1774	1818	97.6
DE07	Neuglobsow	11014	12031	2948	3221	91.5
DE08	Schm'cke	10712	11190	2018	2108	95.7
DE09	Zingst	5283	5288	1072	1072	99.9
DE12	Bassum	5268	5539	1020	1072	95.1
DE17	Ansbach	8740	9485	1311	1423	92.2
DE26	Ueckerm'nde	8218	8543	1394	1450	96.2
DE35	L'ckendorf	8584	10370	1776	2145	82.8
DE39	Aukrug	3138	3299	630	662	95.1
DK31	Ulborg	4302	4472	854	888	96.2
DK32	Frederiksborg	3202	3219	556	559	99.5
EE09	Lahemaa	2806	2841	97	98	98.8
EE11	Vilsandi	4786	4991	139	145	95.9
ES01	San Pablo	4984	9876	306	607	50.5
ES03	Tortosa	1242	2744	0	0	45.3
ES04	Logro±o	6496	6859	362	382	94.7
ES05	Noia	3148	8228	25	65	38.3
ES07	Viznar	11154	11400	982	1004	97.9
ES08	Niembro	1946	2000	232	239	97.3
ES09	Campisabalos	7304	7984	526	574	91.5
ES10	Cabo de Creus	14456	14897	1572	1621	97.0
ES11	Barcarrota	3280	3344	27	28	98.1
ES12	Zarra	10184	10403	595	608	97.9
FI09	Uto	1022	1040	0	0	98.2
FI17	Virolahti	1165	1176	0	0	99.1
FI22	Oulanka	905	905	0	0	99.9
FI37	Ahtari II	1553	1558	39	39	99.7
FR08A	Donon	7256	7336	755	763	98.9
FR08B	Donon	7869	7926	920	927	99.3
FR08C	Donon	480	4015	11	92	12.0
FR08D	Donon	8816	8873	1141	1148	99.4
FR09	Revin	3564	3634	108	110	98.1
FR10	Morvan	3890	4003	139	143	97.2
FR12	Iraty	8055	8596	477	509	93.7

Table 2.2, cont.

Code	Station	AOT40	AOT40 corrected	AOT60	AOT60 corrected	Data capture
FR13	Peyrusse Vieille	1137	1239	0	0	91.7
FR14	Montandon	4221	4447	238	251	94.9
GB02	Eskdalemuir	1180	1181	16	16	99.9
GB06	Lough Navar	1452	1512	81	84	96.0
GB13	Yarner Wood	2178	2317	109	116	94.0
GB14	High Muffles	3060	3122	326	333	98.0
GB15	Strath Vaich	2003	2068	65	67	96.9
GB31	Aston Hill	2135	2144	51	51	99.6
GB32	Bottesford	2111	2135	234	237	98.9
GB33	Bush	829	843	2	2	98.4
GB34	Glazebury	1737	1800	69	71	96.5
GB36	Harwell	2197	2277	86	89	96.5
GB37	Ladybower	1338	1435	136	146	93.2
GB38	Lullington Heath	2970	3377	202	230	87.9
GB39	Sibton	1922	2006	91	95	95.8
GB43	Narberth	1923	2258	102	120	85.1
GB44	Somerton	4007	4090	312	318	98.0
GB45	Wicken Fen	2095	3073	331	486	68.2
GR03	Livadi	19612	24872	5289	6708	78.9
HU02	K-puszta	17187	17409	3346	3389	98.7
IE31	Mace Head	2073	2080	3	3	99.6
IT01	Montelibretti	11496	11951	3370	3504	96.2
IT04	Ispra	932	947	28	28	98.5
LT15	Preila	2614	2896	90	100	90.3
LV10	Rucava	530	635	14	17	83.5
MT01	Giordan lighthouse	17484	17536	2128	2134	99.7
NL09	Kollumerwaard	2939	2950	679	681	99.6
NL10	Vredepeel	2957	3182	433	466	92.9
NO01	Birkenes	2430	2443	226	227	99.5
NO15	Tustervatn	2415	2429	56	57	99.4
NO39	Kaarvatn	3804	3817	396	397	99.7
NO41	Osen	2316	2350	96	97	98.5
NO42	Zeppelinfjellet	71	71	0	0	99.8
NO43	Prestebakke	3800	3946	469	487	96.3
NO45	Jeloya	1705	1709	51	51	99.7
NO48	Voss	2274	2279	72	72	99.7
NO52	Karmoy	2690	2697	226	227	99.7
NO55	Karasjok	1391	1397	0	0	99.6
NO56	Hurdal	3756	3772	168	169	99.6
PL02	Jarczew	9628	9628	1219	1219	100.0
PL03	Sniezka	20268	20339	4084	4099	99.7
PL04	Leba	7000	7000	928	928	100.0
PL05	Diabla Gora	7296	7472	674	690	97.6
PT04	Monte Velho	3200	3985	268	334	80.3
RU16	Shepeljovo	732	1239	6	10	59.1
RU18	Danki	22	22	0	0	99.7
SE02	Rorvik	5259	5282	818	822	99.6
SE11	Vavihill	5019	5041	968	972	99.6
SE12	Aspvreten	3117	3398	86	93	91.7
SE13	Esrange	1804	1809	3	3	99.7
SE32	Norra Kvill	4284	4318	346	349	99.2
SE35	Vindeln	1982	1989	14	15	99.7
SI08	Iskrba	13746	14342	2322	2423	95.8
SI31	Zavodnje	2670	2829	140	148	94.3
SI32	Krvavec	16908	17280	2572	2629	97.8
SI33	Kovk	12993	13540	1950	2032	96.0
SK02	Chopok	2427	3935	181	293	61.7
SK04	Stara-Lesna	1317	1416	34	36	93.0
SK06	Starina	828	949	0	0	87.3
SK07	Topolniky	958	1123	62	73	85.2

Table 2.3: Number of days in 2000 contained in at least one five-day period with short-time AOT40 exceeding the critical level of 500 ppbh.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
AT02	Illmitz	0	0	0	19	31	30	22	31	11	0	0	0	144
AT04	Koloman	0	0	8	30	30	30	4	21	0	0	0	0	123
AT05	Vorhegg	0	0	8	25	19	29	21	15	5	0	0	0	122
AT30	Pillersdorf	0	0	0	17	31	30	18	23	0	0	0	0	119
AT32	Sulzberg	0	0	11	22	30	30	17	23	0	0	0	0	133
AT33	Stolzalpe	0	0	10	22	17	26	7	13	0	0	0	0	95
AT34	Sonnblick	0	6	15	30	31	30	31	31	27	0	0	0	201
AT37	Zillertalen Alpen	0	0	11	30	31	30	23	23	12	0	0	0	160
AT38	Gerlitzen	0	0	8	30	31	30	29	31	15	0	0	0	174
AT40	Masenberg	0	0	0	17	31	30	17	28	13	0	0	0	136
AT41	Haunsberg	0	0	0	6	30	30	12	21	0	0	0	0	99
AT42	Heidenreichstein	0	0	0	12	22	29	10	19	5	0	0	0	97
AT43	Forsthof	0	0	0	0	27	30	10	17	0	0	0	0	84
AT44	GrazPlatte	0	0	0	19	31	30	21	30	12	0	0	0	143
AT45	Dunkelsteinerwald	0	0	0	6	29	30	12	16	0	0	0	0	93
AT46	Gaenserndorf	0	0	0	12	31	30	22	23	0	0	0	0	118
AT47	Stixneusiedl	0	0	0	12	30	30	19	22	5	0	0	0	118
BE01	Offagne	0	0	0	0	15	15	0	14	0	0	0	0	44
BE32	Eupen	0	0	0	0	14	10	0	14	0	0	0	0	38
BE35	Vezin	0	0	0	0	8	9	0	8	0	0	0	0	25
CH02	Payerne	0	0	0	0	19	30	13	22	7	0	0	0	91
CH03	Taenikon	0	0	0	5	29	30	12	22	0	0	0	0	98
CH04	Chaumont	0	0	2	11	29	30	17	20	9	0	0	0	118
CH05	Rigi	0	0	2	15	30	30	17	25	8	0	0	0	127
CZ01	Svratouch	0	0	0	16	29	28	8	25	2	0	0	0	108
CZ03	Kosetice	0	0	0	14	30	29	8	21	8	0	0	0	110
DE01	Westerland	0	0	0	4	20	9	0	0	0	0	0	0	33
DE02	Waldhof	0	0	0	13	23	25	0	9	0	0	0	0	70
DE03	Schauinsland	0	0	2	15	22	30	21	28	9	0	0	0	127
DE04	Deuselbach	0	0	0	12	16	24	4	22	0	0	0	0	78
DE05	Brotjacklriegel	0	0	0	12	31	30	14	17	0	0	0	0	104
DE07	Neuglobsow	0	0	0	12	24	25	0	9	0	0	0	0	70
DE08	Schmücke	0	0	0	13	23	26	9	21	0	0	0	0	92
DE09	Zingst	0	0	0	6	8	19	0	0	0	0	0	0	33
DE12	Bassum	0	0	0	0	18	18	0	0	0	0	0	0	36
DE17	Ansbach	0	0	0	7	19	29	9	18	6	0	0	0	88
DE26	Ueckermünde	0	0	0	5	26	25	0	0	0	0	0	0	56
DE35	Lückendorf	0	0	0	14	21	26	0	20	0	0	0	0	81
DE39	Aukrug	0	0	0	0	8	9	0	0	0	0	0	0	17
DK31	Ulborg	0	0	0	0	15	10	0	0	0	0	0	0	25
DK32	Frederiksborg	0	0	0	0	5	9	0	0	0	0	0	0	14
EE09	Lahemaa	0	0	0	6	0	8	0	0	0	0	0	0	14
EE11	Vilsandi	0	0	0	8	10	9	0	0	0	0	0	0	27
ES01	San Pablo	0	0	24	17	7	20	0	0	0	0	0	0	68
ES03	Tortosa	0	0	0	0	0	0	0	0	0	0	0	0	0
ES04	Logroño	0	0	0	0	5	14	17	15	13	0	0	0	64
ES05	Noia	0	0	24	30	24	0	0	0	0	0	0	0	78
ES07	Viznar	0	0	0	0	10	28	31	26	13	6	0	0	114
ES08	Niembro	0	0	0	0	0	8	0	0	0	0	0	0	8
ES09	Campisabalos	0	0	0	0	5	17	25	27	8	0	0	0	82
ES10	Cabode Creus	0	0	12	30	31	30	29	31	23	0	0	0	186
ES11	Barcarrota	0	0	0	0	0	7	11	6	13	0	0	0	37
ES12	Zarra	0	0	0	3	18	29	29	31	17	0	0	0	127
ES13	Penausende	0	0	0	0	0	0	2	26	26	0	0	0	54
ES14	Els Torms	0	0	0	0	0	0	0	0	0	0	0	0	0
ES15	Risco Llano	0	0	0	0	0	0	0	0	0	0	0	0	0
FI09	Uto	0	0	0	0	0	0	0	0	0	0	0	0	0
FI17	Virolahti	0	0	0	0	0	0	0	0	0	0	0	0	0
FI22	Oulanka	0	0	0	0	0	0	0	0	0	0	0	0	0
FI37	AhtariII	0	0	0	0	0	0	0	0	0	0	0	0	0
FR08A	Donon	0	0	0	0	19	28	3	18	0	0	0	0	68
FR08B	Donon	0	0	0	1	20	28	3	19	0	0	0	0	71
FR08C	Donon	0	0	0	0	0	0	0	19	0	0	0	0	19
FR08D	Donon	0	0	0	1	20	28	4	19	5	0	0	0	77
FR09	Revin	0	0	0	0	8	8	0	7	0	0	0	0	23

Table 2.3, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
FR10	Morvan	0	0	0	0	0	9	0	13	0	0	0	0	22
FR12	Iraty	0	0	15	24	23	19	17	23	9	0	0	0	130
FR13	Peyrusse Vieille	0	0	0	0	0	0	0	0	0	0	0	0	0
FR14	Montandon	0	0	0	0	0	17	0	6	0	0	0	0	23
GB02	Eskdalemuir	0	0	0	0	0	0	0	0	0	0	0	0	0
GB06	Lough Navar	0	0	0	0	8	0	0	0	0	0	0	0	8
GB13	Yarner Wood	0	0	0	0	0	5	0	8	0	0	0	0	13
GB14	High Muffles	0	0	0	0	12	7	0	0	0	0	0	0	19
GB15	Strath Vaich	0	0	0	0	15	0	0	0	0	0	0	0	15
GB31	Aston Hill	0	0	0	0	0	7	0	0	0	0	0	0	7
GB32	Bottesford	0	0	0	0	0	9	0	0	0	0	0	0	9
GB33	Bush	0	0	0	0	0	0	0	0	0	0	0	0	0
GB34	Glazebury	0	0	0	0	0	7	0	0	0	0	0	0	7
GB36	Harwell	0	0	0	0	0	7	0	0	0	0	0	0	7
GB37	Ladybower	0	0	0	0	0	7	0	0	0	0	0	0	7
GB38	Lullington Heat	0	0	0	0	11	7	0	0	0	0	0	0	18
GB39	Sibton	0	0	0	0	0	0	0	0	0	0	0	0	0
GB43	Narberth	0	0	0	0	0	0	0	0	0	0	0	0	0
GB44	Somerton	0	0	0	0	0	14	2	7	0	0	0	0	23
GB45	Wicken Fen	0	0	0	0	0	8	0	0	0	0	0	0	8
GR03	Livadi	0	0	11	27	31	30	31	31	27	4	0	0	192
HU02	K-puszta	0	0	8	19	31	30	28	31	15	0	0	0	162
IE31	Mace Head	0	0	0	0	0	0	0	0	0	0	0	0	0
IT01	Montelibretti	0	0	0	5	3	26	29	30	12	0	0	0	105
IT04	Ispra	0	0	0	0	0	0	0	0	0	0	0	0	0
LT15	Preila	0	0	0	0	6	0	0	0	0	0	0	0	6
LV10	Rucava	0	0	0	0	0	0	0	0	0	0	0	0	0
MT01	Giordan lighthouse	0	21	31	30	31	30	31	31	27	11	0	0	243
NL09	Kollumerwaard	0	0	0	0	9	9	0	0	0	0	0	0	18
NL10	Vredepeel	0	0	0	0	9	8	0	0	0	0	0	0	17
NO01	Birkenes	0	0	0	0	15	0	0	0	0	0	0	0	15
NO15	Tustervatn	0	0	0	11	15	0	0	0	0	0	0	0	26
NO39	Kaarvatn	0	0	0	22	21	8	0	0	0	0	0	0	51
NO41	Osen	0	0	0	5	16	0	0	0	0	0	0	0	21
NO42	Zeppelinfjellet	0	0	0	0	0	0	0	0	0	0	0	0	0
NO43	Prestebakke	0	0	0	0	16	9	0	0	0	0	0	0	25
NO45	Jeloya	0	0	0	0	0	0	0	0	0	0	0	0	0
NO48	Voss	0	0	0	0	9	0	0	0	0	0	0	0	9
NO52	Karmoy	0	0	0	0	9	0	0	0	0	0	0	0	9
NO55	Karasjok	0	0	0	0	0	0	0	0	0	0	0	0	0
NO56	Hurdal	0	0	0	0	17	0	0	0	0	0	0	0	17
PL02	Jarczew	0	0	0	20	31	26	0	7	0	0	0	0	84
PL03	Sniezka	0	0	0	23	31	30	30	26	3	0	0	0	143
PL04	Leba	0	0	0	12	25	22	0	0	0	0	0	0	59
PL05	Diabla Gora	0	0	0	16	31	18	0	0	0	0	0	0	65
PT04	Monte Velho	9	0	0	13	0	8	0	0	0	0	0	0	30
RU16	Shepeljovo	0	0	0	0	0	0	0	0	0	0	0	0	0
RU18	Danki	0	0	0	0	0	0	0	0	0	0	0	0	0
SE02	Rorvik	0	0	0	5	19	17	0	0	0	0	0	0	41
SE11	Vavihill	0	0	0	5	21	17	0	0	0	0	0	0	43
SE12	Aspvreten	0	0	0	0	0	0	0	0	0	0	0	0	0
SE13	Esrange	0	0	0	0	0	0	0	0	0	0	0	0	0
SE32	Norra Kvill	0	0	0	11	20	9	0	0	0	0	0	0	40
SE35	Vindeln	0	0	0	0	0	0	0	0	0	0	0	0	0
SI08	Iskrba	0	0	18	27	29	30	24	26	16	0	0	0	170
SI31	Zavodnje	0	0	0	0	0	8	0	10	0	0	0	0	18
SI32	Krvavec	0	0	14	30	31	30	26	31	21	0	0	0	183
SI33	Kovk	0	0	2	20	31	30	20	18	10	0	0	0	131
SK02	Chopok	0	0	0	0	2	9	9	28	2	0	0	0	50
SK04	Stara-Lesna	0	0	0	0	0	0	0	6	0	0	0	0	6
SK06	Starina	0	0	0	0	0	0	0	0	0	0	0	0	0
SK07	Topolniky	0	0	2	3	0	0	0	0	0	0	0	0	5

Annex 3

Seasonal variation

Table 3.1: Monthly mean concentrations 2000 (μg/m³).

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AT02	Illmitz	47.7	53.3	70.4	85.5	94.3	99.0	77.3	90.9	60.5	49.0	37.8	23.9
AT04	Koloman	70.4	77.0	85.5	99.3	101.8	103.2	88.1	102.5	75.8	61.4	57.9	67.1
AT05	Vorhegg	74.3	83.7	92.1	98.3	93.1	98.1	89.5	92.3	70.8	46.3	52.9	51.7
AT30	Pillersdorf	55.2	58.0	66.0	86.9	96.9	103.2	79.9	90.7	61.1	44.0	30.0	29.8
AT32	Sulzberg	67.7	75.5	82.9	96.9	100.6	106.7	89.8	103.2	85.2	60.2	64.1	65.0
AT33	Stolzalpe	78.0	81.5	90.8	92.4	82.5	90.6	78.1	79.1	61.0	49.8	50.3	55.9
AT34	Sonnblick	88.9	94.4	102.2	118.2	117.5	115.8	109.6	117.6	104.7	93.7	88.5	89.9
AT37	Zillertalen Alpen	83.9	87.9	96.0	112.5	110.6	108.8	98.9	108.6	96.8	83.1	80.5	84.4
AT38	Gerlitzen	81.0	88.6	93.8	114.7	118.4	118.3	110.8	121.3	101.7	-	75.9	78.1
AT40	Masenberg	76.2	73.0	82.2	99.6	107.8	114.2	90.3	107.6	85.2	74.1	63.8	63.2
AT41	Haunsberg	57.1	68.7	76.5	90.1	98.5	102.4	82.9	95.7	64.3	51.3	43.8	43.5
AT42	Heidenreichstein	47.6	54.0	59.6	81.0	88.2	93.4	71.9	78.2	56.7	45.6	31.9	31.3
AT43	Forsthof	44.9	50.3	57.6	76.4	94.0	103.9	80.0	97.0	61.8	52.7	35.6	27.9
AT44	Graz Platte	50.3	68.6	82.3	104.1	108.7	117.9	91.0	110.3	79.2	55.9	40.2	30.1
AT45	Dunkelsteinerwald	34.4	45.7	57.4	71.5	85.6	88.0	71.3	75.1	49.9	32.0	20.8	22.4
AT46	Gaenserndorf	44.4	50.2	60.3	82.0	86.2	95.9	71.6	80.8	52.2	45.4	32.1	19.2
AT47	Stixneusiedl	40.9	50.3	58.1	81.7	89.2	96.5	75.5	87.4	60.0	48.9	35.9	23.1
BE01	Offagne	43.1	55.5	57.8	72.4	68.8	72.4	54.6	63.4	50.5	47.2	57.4	37.3
BE32	Eupen	32.1	47.8	46.1	67.5	66.8	69.5	52.4	60.1	52.5	48.1	60.2	40.9
BE35	Vezin	30.9	45.3	46.2	59.4	54.1	58.5	42.5	45.1	39.5	39.8	47.7	35.9
CH02	Payerne	24.5	43.8	57.2	63.8	69.0	79.8	66.7	66.4	54.0	32.6	33.0	21.9
CH03	Taenikon	33.4	48.5	59.6	63.7	74.1	84.1	67.0	70.1	47.2	33.3	30.5	23.5
CH04	Chaumont	63.0	75.4	82.5	92.3	98.2	106.5	84.9	101.5	87.1	66.7	61.1	62.8
CH05	Rigi	61.9	74.8	81.3	93.7	99.1	108.4	89.4	104.2	86.6	61.8	63.1	61.2
CZ01	Svratouch	54.2	60.6	67.9	91.7	97.4	99.4	73.8	94.0	65.9	54.8	41.9	40.7
CZ03	Kosetice	52.8	60.8	66.8	85.4	91.7	90.6	67.9	80.5	60.5	49.6	38.4	36.2
DE01	Westerland	57.6	63.5	75.9	77.9	88.9	69.9	74.9	77.3	59.7	49.7	37.5	35.3
DE02	Waldhof	37.8	49.2	61.4	74.0	83.9	83.1	58.8	58.0	44.2	33.5	27.9	28.0
DE03	Schauinsland	65.9	76.2	81.0	94.1	99.8	107.9	89.9	107.4	90.4	71.2	68.0	70.7
DE04	Deuselbach	-	-	61.6	85.4	83.4	87.5	64.5	82.4	58.8	50.6	54.7	43.6
DE05	Brotjacklriegel	63.3	65.4	78.6	93.8	105.0	104.5	81.7	100.1	71.1	58.6	54.0	-
DE07	Neuglobsow	32.8	39.9	51.8	65.2	89.2	86.5	59.3	55.3	44.4	29.3	18.7	22.7
DE08	Schmücke	49.9	57.9	69.4	88.7	104.8	101.6	73.2	95.7	70.0	55.7	49.4	45.4
DE09	Zingst	43.5	51.8	63.5	73.2	80.5	80.4	62.9	60.9	55.3	37.6	25.3	27.3
DE12	Bassum	32.3	45.0	51.8	59.2	68.4	67.1	47.5	48.0	33.3	29.5	31.3	26.3

Table 3.1, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DE17	Ansbach	26.3	42.2	53.3	63.0	70.8	78.4	58.1	74.4	45.6	30.0	26.2	18.2
DE26	Ueckermünde	36.5	43.6	51.9	66.4	86.9	87.8	55.7	46.7	55.9	38.8	25.5	24.1
DE35	Lückendorf	45.9	54.1	62.4	81.0	99.3	96.1	62.3	84.7	54.2	43.9	29.6	28.0
DE39	Aukrug	30.7	37.1	47.9	51.5	59.5	57.4	47.4	45.0	36.9	27.5	21.5	23.2
DK31	Ulborg	57.7	60.4	71.5	73.1	83.3	76.9	58.3	62.5	51.9	46.9	37.7	34.0
DK32	Frederiksborg	41.0	47.6	59.1	63.5	74.4	66.6	51.3	48.0	46.6	27.8	19.9	20.9
EE09	Lahemaa	59.4	66.3	80.5	79.3	80.7	73.9	57.6	49.8	40.2	45.9	33.5	42.8
EE11	Vilsandi	70.6	76.0	88.4	95.4	99.2	93.4	78.7	81.0	70.6	62.3	46.9	50.1
ES01	San Pablo	72.0	85.1	101.2	97.5	89.7	106.0	-	-	-	-	-	-
ES03	Tortosa	40.5	52.9	67.5	72.1	62.1	-	-	-	-	-	-	-
ES04	Logroño	35.8	45.0	61.7	70.7	65.1	73.1	72.6	74.1	64.0	45.4	33.1	29.7
ES05	Noia	79.0	87.0	101.4	101.7	90.7	-	-	-	-	-	-	-
ES07	Viznar	67.9	80.2	88.7	82.0	83.0	98.1	96.9	94.1	83.8	75.2	58.8	63.1
ES08	Niembro	53.5	49.8	71.6	74.2	70.6	63.8	57.7	59.7	60.2	50.8	53.6	56.6
ES09	Campisabalos	61.4	62.8	76.6	82.8	73.3	86.9	82.2	87.9	76.6	67.1	69.2	70.0
ES10	Cabo de Creus	69.4	80.6	98.6	110.8	108.4	101.6	104.0	108.6	102.7	87.9	76.6	71.4
ES11	Barcarrota	44.5	43.1	63.9	67.1	52.4	70.3	69.1	69.9	69.4	51.7	45.9	50.3
ES12	Zarra	59.6	70.1	88.9	87.2	87.2	95.0	90.1	98.1	91.1	73.2	59.0	62.7
ES13	Penausende	-	-	-	-	-	-	-	94.8	94.8	73.3	67.6	72.7
ES14	Els Torms	-	-	-	-	-	-	-	-	-	-	42.3	34.9
ES15	Risco Llano	-	-	-	-	-	-	-	-	-	-	71.3	75.5
FI09	Uto	60.7	63.6	75.3	74.4	77.9	74.8	64.2	67.4	69.9	63.6	47.2	50.8
FI17	Virolahti	52.7	59.4	74.9	68.1	70.6	64.4	51.7	42.4	39.0	44.9	37.8	36.8
FI22	Oulanka	60.4	68.6	84.0	83.6	76.3	65.6	55.9	44.2	51.9	51.6	40.9	48.3
FI37	Ahtari II	60.8	64.4	78.8	76.9	80.0	70.3	56.5	44.7	45.6	49.2	36.7	41.3
FR08A	Donon	49.4	66.1	67.1	81.3	91.6	92.5	72.7	91.6	74.3	60.2	59.3	55.4
FR08B	Donon	49.6	66.6	68.1	81.7	92.4	93.1	73.8	93.9	76.5	61.7	59.8	56.0
FR08C	Donon	-	-	-	-	-	-	-	95.4	77.9	62.8	-	52.2
FR08D	Donon	51.4	68.2	69.8	84.9	96.5	96.6	77.1	96.5	79.0	63.5	61.5	57.4
FR09	Revin	39.8	53.9	56.3	69.6	66.6	70.0	51.7	63.3	52.1	45.3	48.3	37.1
FR10	Morvan	-	59.5	65.3	77.4	69.0	75.9	58.1	65.9	58.9	53.0	57.1	52.4
FR12	Iraty	-	80.0	100.6	102.8	100.3	96.9	91.7	100.6	96.6	80.4	72.0	75.9
FR13	Peyrusse Vieille	37.3	54.0	65.1	69.4	63.9	61.5	54.7	57.2	56.9	46.7	44.6	47.2
FR14	Montandon	29.5	45.8	53.6	55.1	63.5	78.4	64.1	66.9	57.3	43.9	40.5	37.8

Table 3.1, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GB02	Eskdalemuir	43.4	57.4	57.9	62.0	64.3	50.9	43.0	34.5	37.3	37.4	40.4	40.6
GB06	Lough Navar	-	62.1	56.7	55.7	61.3	52.7	43.1	35.0	35.6	46.4	46.7	41.9
GB13	Yarner Wood	52.3	66.5	-	-	71.1	60.8	54.1	51.9	47.4	55.7	59.3	50.9
GB14	High Muffles	52.0	57.6	66.0	74.9	81.2	66.4	53.8	47.1	43.6	40.3	39.8	40.4
GB15	Strath Vaich	75.6	79.8	79.7	82.0	77.9	66.7	52.5	50.1	54.9	61.7	62.8	57.7
GB31	Aston Hill	63.8	73.7	70.2	74.3	77.1	65.0	56.9	52.9	52.4	55.7	-	50.9
GB32	Bottesford	34.3	49.2	48.2	59.2	61.9	53.2	44.5	41.2	39.6	39.1	41.1	36.1
GB33	Bush	56.6	56.2	66.5	68.2	70.0	59.6	48.0	43.8	44.7	47.8	49.3	45.4
GB34	Glazebury	33.5	46.8	46.7	50.6	56.0	41.9	37.4	-	-	-	27.9	25.4
GB36	Harwell	41.9	58.6	53.1	63.9	66.1	55.2	50.6	49.2	43.5	47.8	47.1	40.2
GB37	Ladybower	52.9	60.7	61.3	66.7	68.6	56.4	48.5	46.3	41.3	42.5	45.4	43.0
GB38	Lullington Heath	43.0	60.9	58.3	69.7	76.8	55.8	56.3	56.5	55.3	56.1	56.7	45.5
GB39	Sibton	38.7	48.0	52.8	67.4	68.7	54.7	48.5	45.3	44.6	-	28.8	34.2
GB43	Narberth	63.8	74.3	72.8	79.4	75.5	65.0	60.0	-	-	58.5	-	57.1
GB44	Somerton	45.4	64.6	61.6	73.2	71.5	66.9	56.7	55.0	50.9	55.4	55.2	57.8
GB45	Wicken Fen	32.3	45.8	47.7	55.7	62.0	53.1	-	-	-	32.9	33.3	29.5
GR03	Livadi	-	-	-	103.2	101.6	115.0	114.1	118.1	100.9	-	66.2	69.1
HU02	K-puszta	55.5	61.3	76.1	83.6	90.1	98.4	86.4	97.1	62.6	59.7	36.1	29.4
IE31	Mace Head	72.3	83.7	81.9	80.8	82.8	68.7	53.9	58.0	63.5	73.4	72.0	63.7
IT01	Montelibretti	18.5	33.7	49.9	44.6	35.8	68.6	76.4	83.0	-	34.9	28.0	21.7
IT04	Ispra	16.7	26.2	66.0	66.9	66.2	84.6	83.5	72.4	46.6	24.3	24.3	16.5
LT15	Preila	49.9	-	75.0	76.4	81.4	79.6	67.1	73.1	59.9	49.1	27.7	32.9
LV10	Rucava	48.9	51.8	61.0	63.2	62.2	62.8	47.6	51.6	42.2	43.3	35.5	28.3
MT01	Giordan lighthouse	90.0	105.2	109.7	119.0	116.6	109.8	105.5	114.5	108.2	94.3	86.4	87.7
NL09	Kollumerwaard	38.8	48.4	60.8	52.1	68.1	63.1	54.2	45.8	34.7	31.1	24.0	28.6
NL10	Vredepeel	20.4	35.3	36.2	42.6	54.7	52.1	38.3	36.5	21.8	28.1	30.6	25.0
NO01	Birkenes	56.6	60.5	69.5	64.5	69.1	62.7	46.9	46.7	44.3	40.4	39.0	38.0
NO15	Tustervatn	79.1	81.8	88.1	93.1	88.5	68.7	49.8	47.9	53.4	59.5	49.1	64.5
NO39	Kaarvatn	76.6	82.3	87.9	89.7	76.6	60.7	44.9	34.0	41.5	46.7	52.0	51.9
NO41	Osen	61.2	62.9	79.0	76.6	70.4	62.9	43.3	37.5	40.0	42.0	42.1	41.0
NO42	Zeppelinfjellet	70.2	-	77.8	51.6	51.0	50.6	48.0	48.5	58.4	64.5	69.9	74.4
NO43	Prestebakke	56.1	63.1	74.7	74.5	82.0	70.9	50.5	54.2	48.0	46.5	40.8	43.7
NO45	Jeloya	52.3	54.6	72.3	66.4	75.8	70.3	49.8	52.1	43.4	-	34.5	38.3

Table 3.1, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO48	Voss	68.6	73.4	80.8	83.4	74.9	63.3	49.4	42.3	50.9	55.7	52.4	55.7
NO52	Karmoy	66.8	70.7	73.8	79.3	80.5	71.5	56.9	58.6	58.2	63.0	60.6	55.0
NO55	Karasjok	66.8	71.7	85.5	83.9	76.1	67.5	53.9	45.9	48.4	52.1	44.7	55.3
NO56	Hurdal	52.4	52.4	75.2	76.2	80.2	73.3	51.5	49.5	45.8	47.0	45.0	41.5
PL02	Jarczew	43.3	53.1	65.5	79.1	83.1	81.0	62.3	58.0	37.7	-	25.8	24.9
PL03	Sniezka	68.1	66.3	78.4	104.3	109.7	131.9	114.1	102.5	85.8	75.8	63.3	74.7
PL04	Leba	55.6	67.0	73.0	85.0	84.9	84.5	64.6	57.9	49.1	39.9	28.6	32.3
PL05	Diabla Gora	50.0	55.8	67.9	81.5	90.7	78.8	60.8	59.3	54.8	59.7	31.4	22.9
PT04	Monte Velho	72.3	60.2	67.1	82.4	60.0	62.3	54.7	-	-	-	38.3	51.7
RU16	Shepeljovo	-	-	58.4	59.7	-	70.6	54.0	56.8	53.9	48.1	33.6	35.2
RU18	Danki	48.7	52.3	60.6	57.8	54.6	43.7	43.3	42.4	37.4	-	35.2	-
SE02	Rorvik	54.5	62.2	72.2	71.5	80.4	75.0	55.0	62.5	55.2	44.9	42.9	37.2
SE11	Vavihill	47.1	56.4	70.3	77.6	86.8	73.9	53.1	54.4	65.9	40.3	31.0	33.8
SE12	Aspvreten	51.4	59.0	75.7	76.4	79.1	72.5	53.9	48.1	52.1	48.9	37.7	44.1
SE13	Esrange	69.9	70.5	84.2	86.0	79.3	68.2	56.1	47.1	52.8	51.2	41.5	57.9
SE32	Norra Kvill	55.1	61.5	77.4	82.1	86.5	76.1	54.0	55.9	60.1	49.4	38.9	44.2
SE35	Vindeln	63.1	64.6	82.5	78.0	76.1	60.2	45.8	33.8	35.3	40.7	30.5	38.6
SI08	Iskrba	44.9	54.1	78.4	75.8	73.0	75.5	79.1	63.0	52.1	44.6	49.8	43.1
SI31	Zavodnje	36.4	50.9	59.7	73.3	69.9	76.8	69.4	82.2	56.5	52.0	33.3	38.4
SI32	Krvavec	82.4	87.6	97.7	115.7	117.5	116.7	106.8	118.0	100.3	86.1	76.6	74.4
SI33	Kovk	48.7	67.1	82.7	95.8	99.6	105.5	87.4	101.8	82.2	59.1	47.3	33.8
SK02	Chopok	60.0	57.2	-	57.0	64.2	-	86.2	110.2	90.2	80.9	66.5	-
SK04	Stara-Lesna	51.4	59.0	69.9	83.1	82.0	67.0	42.8	67.7	49.2	60.3	47.5	34.3
SK06	Starina	52.9	54.9	68.9	66.8	76.2	81.4	65.3	75.3	52.8	59.1	56.8	42.9
SK07	Topolniky	-	62.3	90.6	107.2	104.3	61.5	54.8	61.3	39.4	34.7	23.9	17.4

Table 3.2: Monthly data capture 2000 (μg/m³).

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AT02	Illmitz	96.0	95.5	95.4	95.0	95.6	88.5	98.7	97.4	95.4	96.4	95.6	97.2
AT04	Koloman	93.7	95.3	93.8	94.7	95.4	95.7	94.6	94.9	96.5	95.6	95.6	96.2
AT05	Vorhegg	95.2	95.1	94.1	94.9	95.2	94.7	95.0	94.9	94.7	95.2	94.9	95.0
AT30	Pillersdorf	95.2	95.4	95.7	95.1	95.2	95.6	95.2	95.6	96.2	95.3	95.0	95.7
AT32	Sulzberg	99.9	99.9	99.6	100.0	100.0	97.1	100.0	99.7	93.5	87.5	99.7	99.1
AT33	Stolzalpe	96.0	95.7	95.0	95.7	94.9	94.9	95.3	95.3	96.4	79.0	68.3	95.7
AT34	Sonnblick	96.0	96.3	96.5	96.5	92.2	95.0	94.4	96.8	97.4	99.2	96.9	96.6
AT37	Zillertalen Alpen	100.0	95.8	85.3	97.9	98.3	100.0	99.5	100.0	98.3	100.0	97.2	100.0
AT38	Gerlitzen	97.0	97.0	83.9	97.2	96.9	92.4	97.2	97.0	91.8	32.3	53.3	97.2
AT40	Masenberg	95.7	95.7	95.6	94.0	94.9	95.1	95.4	95.3	95.6	94.0	95.3	95.6
AT41	Haunsberg	100.0	100.0	100.0	90.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9
AT42	Heidenreichstein	95.6	97.0	95.3	86.8	80.8	91.9	96.9	95.4	95.4	95.2	95.7	95.4
AT43	Forsthof	95.7	95.3	95.7	95.4	95.4	95.7	95.8	95.4	95.8	95.8	95.6	95.8
AT44	Graz Platte	100.0	100.0	100.0	100.0	94.4	100.0	100.0	100.0	100.0	99.5	90.1	100.0
AT45	Dunkelsteinerwald	97.6	95.5	97.7	95.6	84.7	95.6	93.8	95.2	95.6	95.6	95.6	95.4
AT46	Gaenserndorf	95.4	95.7	95.4	95.3	95.2	95.3	95.4	98.9	100.0	100.0	100.0	96.2
AT47	Stixneusiedl	95.6	95.4	96.0	95.3	95.6	95.7	95.4	95.6	95.7	95.6	95.6	95.6
BE01	Offagne	96.5	95.8	95.7	83.2	95.4	96.1	95.3	93.4	94.3	92.2	84.0	86.0
BE32	Eupen	98.3	98.6	98.5	84.6	95.7	97.9	97.0	97.2	97.4	98.7	85.7	86.4
BE35	Vezin	96.6	97.4	84.1	96.9	98.7	98.6	98.5	98.7	97.9	81.3	97.2	97.3
CH02	Payerne	95.2	95.4	95.3	93.6	95.0	95.4	87.2	94.9	95.4	75.8	94.4	95.7
CH03	Taenikon	90.7	95.5	94.6	95.0	95.2	92.6	95.3	95.4	95.6	95.4	95.0	95.7
CH04	Chaumont	95.4	95.4	95.3	94.2	94.8	91.4	88.6	82.3	95.1	95.4	95.1	89.2
CH05	Rigi	92.1	95.4	94.2	95.1	95.0	91.5	90.5	91.0	93.5	95.4	95.1	92.9
CZ01	Svratouch	97.4	100.0	99.1	100.0	99.9	99.9	92.9	99.2	99.9	99.3	99.7	99.6
CZ03	Kosetice	99.9	100.0	100.0	100.0	99.9	100.0	100.0	100.0	99.7	100.0	99.9	100.0
DE01	Westerland	93.7	98.9	95.3	98.6	98.9	99.2	98.9	98.8	98.1	97.6	94.6	100.9
DE02	Waldhof	96.9	94.8	94.6	91.4	91.7	91.7	91.5	91.7	91.7	88.4	85.7	94.5
DE03	Schauinsland	91.8	95.3	96.2	96.1	95.6	96.7	97.3	97.2	97.4	97.3	96.2	100.3
DE04	Deuselbach	0.0	0.0	62.1	92.2	90.9	91.8	92.1	86.3	91.0	92.2	92.2	94.8
DE05	Brotjacklriegel	95.0	97.6	91.0	90.0	97.3	98.2	97.7	97.0	86.0	96.0	95.8	46.8
DE07	Neuglobsow	92.6	95.8	94.4	85.4	87.4	94.4	96.1	96.4	95.8	95.7	95.7	98.3
DE08	Schmücke	93.0	96.0	94.6	95.7	96.2	96.1	95.3	96.1	95.8	96.2	96.1	99.1
DE09	Zingst	96.9	99.1	95.2	99.3	100.0	99.3	100.0	96.0	99.7	95.4	99.9	102.7
DE12	Bassum	92.6	94.5	96.1	95.7	96.0	96.0	95.7	96.0	95.7	95.8	95.7	97.7

Table 3.2, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
DE17	Ansbach	78.9	92.2	95.7	89.0	93.3	87.6	95.8	66.9	78.6	96.0	71.2	95.4
DE26	Ueckermünde	93.0	95.0	96.1	95.7	96.2	95.8	96.2	96.1	94.7	95.6	96.1	98.9
DE35	Lückendorf	77.6	94.0	95.6	95.4	64.9	90.3	95.8	95.7	96.1	95.8	96.0	99.1
DE39	Aukrug	93.0	95.1	95.0	96.0	96.0	96.1	95.8	52.4	96.0	95.8	95.8	98.5
DK31	Ulborg	99.6	99.1	98.4	99.4	90.2	99.4	99.7	99.9	99.4	78.1	97.6	99.9
DK32	Frederiksborg	95.4	99.7	77.4	99.9	99.6	99.7	99.9	93.7	100.0	99.5	100.0	100.0
EE09	Lahemaa	99.9	100.0	99.9	99.9	99.3	98.3	99.5	98.3	99.9	99.1	100.0	99.6
EE11	Vilsandi	96.0	97.3	92.1	94.6	88.0	95.8	94.8	95.3	95.3	96.5	93.6	98.4
ES01	San Pablo	87.6	95.0	90.2	93.5	88.7	57.6	0.0	0.0	0.0	0.0	0.0	0.0
ES03	Tortosa	92.1	89.5	91.9	90.0	92.9	39.0	0.0	0.0	0.0	0.0	0.0	0.0
ES04	Logroño	88.8	89.2	94.5	93.6	95.0	91.5	86.8	89.8	93.6	89.1	94.9	95.2
ES05	Noia	95.3	94.8	95.0	94.7	92.7	18.8	0.0	0.0	0.0	0.0	0.0	0.0
ES07	Viznar	87.0	91.4	94.1	92.1	94.1	94.3	95.0	94.8	95.0	91.8	95.4	93.8
ES08	Niembro	93.8	95.0	95.2	94.6	94.6	93.1	94.9	95.2	94.4	94.0	93.5	93.8
ES09	Campisabalos	91.8	94.4	94.9	92.8	81.9	84.3	93.4	91.8	79.0	82.1	83.8	93.1
ES10	Cabo de Creus	89.4	95.3	92.6	94.7	93.5	95.1	93.8	94.2	94.9	90.3	95.0	93.4
ES11	Barcarrota	86.4	95.0	94.5	95.3	94.5	94.9	92.3	93.0	95.0	94.4	94.9	83.3
ES12	Zarra	94.8	94.4	95.3	95.0	95.0	94.9	94.1	95.0	95.3	95.0	95.1	94.8
ES13	Penausende	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.0	93.6	94.9	92.2	94.9
ES14	Els Torms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.0	95.0
ES15	Risco Llano	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.2	82.5
FI09	Uto	99.6	97.8	100.0	99.7	95.6	100.0	100.0	97.7	100.0	97.7	100.0	99.9
FI17	Virolahti	97.8	100.0	99.5	96.4	100.0	97.6	100.0	98.0	99.6	100.0	98.3	99.2
FI22	Oulanka	98.7	100.0	100.0	98.5	100.0	99.4	99.9	100.0	97.1	100.0	100.0	100.0
FI37	Ahtari II	98.5	100.0	100.0	96.2	99.7	99.7	100.0	98.9	100.0	100.0	100.0	99.6
FR08A	Donon	85.3	99.0	99.6	97.6	99.6	97.9	97.2	96.6	98.1	96.2	98.3	98.3
FR08B	Donon	85.5	99.3	99.9	97.4	99.6	98.2	97.4	96.8	98.3	96.5	98.1	98.4
FR08C	Donon	0.0	0.0	0.0	0.0	0.0	0.0	35.5	98.0	99.9	98.0	27.9	56.5
FR08D	Donon	85.3	99.4	99.7	97.9	99.9	99.2	99.9	98.0	99.9	97.8	99.7	99.7
FR09	Revin	99.3	98.7	99.5	99.4	99.5	98.2	99.5	99.3	99.4	97.4	98.3	99.6
FR10	Morvan	40.3	99.0	98.5	98.5	98.7	99.0	93.8	98.7	94.9	99.1	99.4	99.3
FR12	Iraty	9.7	96.7	99.6	99.4	99.3	96.5	85.6	90.6	84.0	90.3	99.4	96.1
FR13	Peyrusse Vieille	99.9	99.9	99.7	99.7	79.3	99.4	96.0	99.6	96.1	98.4	99.9	99.5
FR14	Montandon	98.1	96.3	74.7	97.4	88.2	97.2	95.4	98.1	98.5	97.7	97.5	98.5

Table 3.2, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GB02	Eskdalemuir	98.8	99.1	99.6	99.7	99.9	100.0	100.0	99.6	90.3	99.2	99.9	99.3
GB06	Lough Navar	0.0	97.4	99.6	96.9	97.2	98.2	97.8	99.9	99.7	99.1	99.9	99.6
GB13	Yarner Wood	98.4	52.2	0.0	43.2	84.4	99.9	98.9	99.6	99.7	99.3	99.0	99.6
GB14	High Muffles	89.4	79.7	99.7	99.2	97.8	97.8	99.7	99.3	73.1	99.5	96.9	99.5
GB15	Strath Vaich	84.4	99.6	99.2	84.7	99.6	92.4	97.7	99.5	100.0	99.2	99.4	99.9
GB31	Aston Hill	99.1	99.9	96.6	98.9	99.9	99.4	99.7	99.5	93.5	99.9	1.5	97.4
GB32	Bottesford	99.1	99.4	97.3	99.7	99.9	98.6	99.6	99.6	99.4	99.9	99.7	99.5
GB33	Bush	55.0	73.1	99.6	97.5	99.1	99.3	98.4	98.7	99.9	96.0	98.3	99.6
GB34	Glazebury	68.4	99.9	99.2	99.6	99.9	99.6	90.5	44.2	0.0	14.0	95.8	99.9
GB36	Harwell	98.9	99.3	97.0	96.2	90.6	99.2	99.6	99.2	95.7	99.6	95.6	99.7
GB37	Ladybower	98.8	98.3	95.8	99.7	88.6	92.9	99.3	88.3	99.6	96.1	96.1	91.8
GB38	Lullington Heath	99.1	99.1	98.5	97.4	93.7	76.5	98.7	98.7	99.6	70.8	61.9	89.7
GB39	Sibton	98.1	99.1	99.1	100.0	98.5	92.1	99.3	95.2	90.1	39.0	89.0	99.7
GB43	Narberth	93.5	93.5	95.8	94.7	95.7	63.6	89.9	0.0	43.1	56.7	42.4	98.3
GB44	Somerton	60.5	86.6	99.6	94.0	99.3	100.0	96.4	99.5	99.7	96.1	99.4	77.6
GB45	Wicken Fen	97.6	99.7	99.5	91.1	99.3	98.8	9.8	0.0	28.1	95.0	98.8	99.1
GR03	Livadi	0.0	0.0	27.4	78.5	84.3	84.2	72.2	76.7	82.6	34.7	84.6	97.7
HU02	K-puszta	96.2	98.6	99.5	96.5	100.0	98.3	96.9	92.2	99.6	96.1	98.5	99.5
IE31	Mace Head	99.9	97.3	100.0	99.4	99.5	100.0	100.0	100.0	69.9	98.5	99.7	99.9
IT01	Montelibretti	100.0	99.3	99.9	99.7	99.9	99.7	86.6	79.4	48.1	83.5	50.1	90.9
IT04	Ispra	84.3	97.7	97.3	99.7	97.7	98.9	98.9	97.0	98.6	99.7	99.6	97.4
LT15	Preila	76.1	0.0	78.1	100.0	100.0	100.0	70.7	100.0	100.0	94.2	99.4	96.0
LV10	Rucava	98.9	77.7	96.9	99.6	99.3	88.1	65.7	98.5	99.6	99.5	99.3	99.5
MT01	Giordan lighthouse	99.3	99.6	99.6	99.6	99.9	100.0	99.7	98.9	99.7	99.7	100.0	99.3
NL09	Kollumerwaard	100.0	100.0	96.2	99.9	100.0	100.0	98.1	97.3	98.1	89.1	99.6	99.2
NL10	Vredepeel	81.5	95.8	91.4	79.7	88.7	100.0	92.5	100.0	99.2	100.0	100.0	99.6
NO01	Birkenes	99.9	100.0	100.0	99.2	100.0	99.6	99.6	100.0	100.0	100.0	97.9	100.0
NO15	Tustervatn	100.0	100.0	100.0	100.0	100.0	99.0	100.0	100.0	99.0	99.5	98.8	100.0
NO39	Kaarvatn	100.0	99.9	100.0	100.0	100.0	99.4	100.0	99.9	100.0	99.9	99.9	100.0
NO41	Osen	99.7	100.0	98.0	100.0	99.9	97.2	99.5	99.7	100.0	98.8	100.0	100.0
NO42	Zeppelinfjellet	99.9	0.0	53.2	100.0	99.6	100.0	100.0	89.0	94.3	100.0	100.0	99.6
NO43	Prestebakke	100.0	99.6	100.0	99.9	99.9	99.9	90.1	99.2	100.0	99.6	100.0	98.4
NO45	Jeloya	99.7	99.4	100.0	100.0	99.6	100.0	100.0	100.0	100.0	17.2	91.7	99.7

Table 3.2, cont.

Code	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
NO48	Voss	99.2	99.9	100.0	99.6	100.0	100.0	99.5	100.0	100.0	99.1	100.0	100.0
NO52	Karmoy	99.2	71.0	82.3	97.6	100.0	100.0	99.6	100.0	98.1	100.0	100.0	100.0
NO55	Karasjok	99.3	99.0	99.9	100.0	97.3	99.2	99.9	100.0	99.0	99.2	99.9	99.3
NO56	Hurdal	100.0	99.7	99.7	100.0	99.5	99.0	100.0	99.3	99.6	100.0	100.0	81.7
PL02	Jarczew	99.5	99.0	100.0	100.0	100.0	100.0	99.7	97.3	95.8	0.0	68.5	100.0
PL03	Sniezka	100.0	100.0	100.0	100.0	100.0	100.0	99.1	100.0	100.0	100.0	100.0	100.0
PL04	Leba	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	77.1	100.0
PL05	Diabla Gora	96.1	100.0	100.0	97.8	99.7	100.0	93.8	96.4	98.9	94.8	100.0	94.8
PT04	Monte Velho	90.7	91.8	98.0	96.0	91.7	96.0	54.6	0.0	0.0	38.3	82.2	66.1
RU16	Shepeljovo	0.0	0.0	58.5	71.1	21.9	60.1	95.0	90.1	87.6	93.3	100.0	93.5
RU18	Danki	59.7	58.5	100.0	99.9	100.0	99.7	99.9	99.3	86.7	49.1	68.3	40.3
SE02	Rorvik	99.3	99.6	100.0	100.0	99.3	99.9	100.0	100.0	99.0	99.9	100.0	100.0
SE11	Vavihill	96.5	99.1	99.7	99.7	99.3	99.9	100.0	100.0	96.5	94.4	99.2	99.6
SE12	Aspvreten	70.4	71.8	79.7	74.2	95.7	82.8	97.4	95.8	97.5	79.0	81.7	81.2
SE13	Esrange	100.0	99.4	100.0	100.0	100.0	99.3	100.0	100.0	100.0	99.6	100.0	100.0
SE32	Norra Kvill	99.5	100.0	100.0	100.0	98.8	99.9	100.0	100.0	100.0	99.5	100.0	100.0
SE35	Vindeln	100.0	99.3	99.7	100.0	100.0	99.3	100.0	100.0	100.0	99.3	77.2	98.5
SI08	Iskrba	90.1	95.3	92.9	94.2	93.8	93.2	87.0	93.1	92.2	91.3	72.1	88.7
SI31	Zavodnje	92.6	93.7	94.4	89.9	89.2	91.2	92.1	94.1	90.3	85.9	92.2	93.5
SI32	Krvavec	97.4	80.0	94.9	99.3	98.9	98.5	98.4	91.9	99.7	99.1	99.2	82.1
SI33	Kovk	92.6	94.1	94.8	94.9	92.6	92.9	93.7	88.7	84.9	89.9	88.5	88.4
SK02	Chopok	99.1	99.6	49.7	52.6	89.1	40.4	56.2	93.3	90.7	78.2	99.0	32.4
SK04	Stara-Lesna	98.9	99.1	99.6	99.6	99.7	99.0	88.3	94.0	76.5	75.3	98.9	100.9
SK06	Starina	98.9	99.9	99.7	99.2	99.7	80.1	82.8	98.8	99.6	99.6	82.8	64.9
SK07	Topolniky	45.6	99.9	100.0	100.0	71.4	82.8	100.0	99.9	99.6	93.0	100.0	101.1

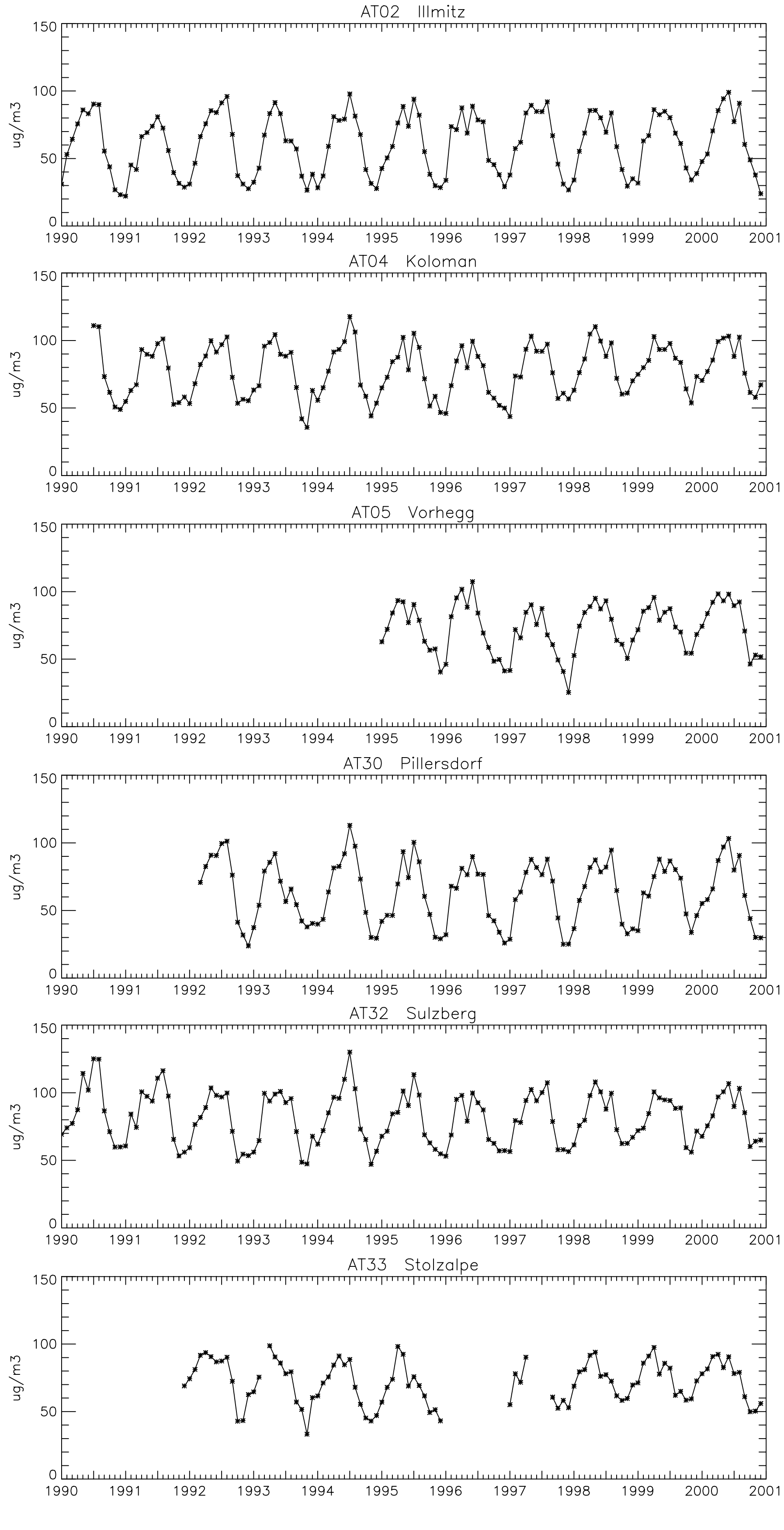


Figure 3.1: Seasonal variation, 1990–2000.

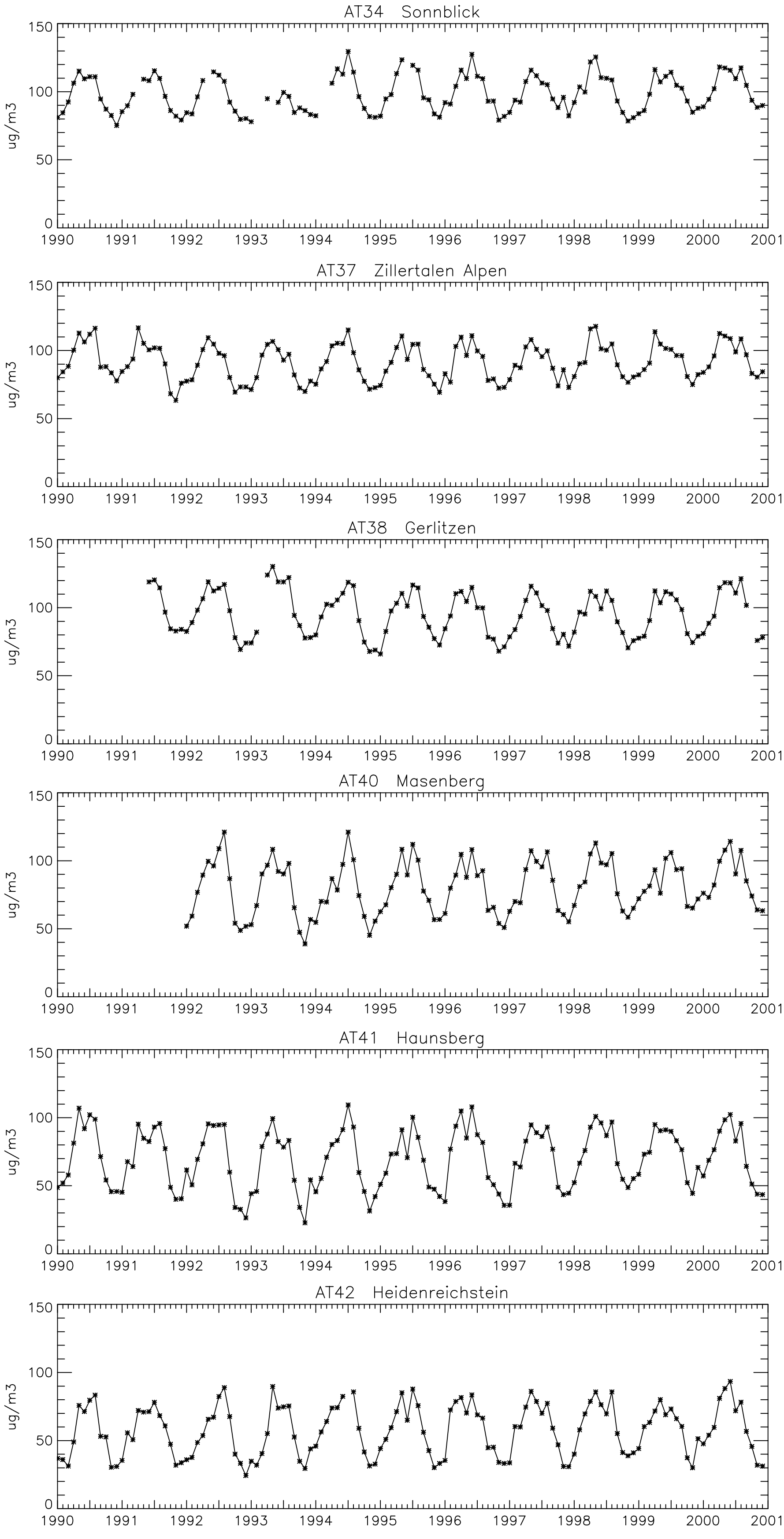
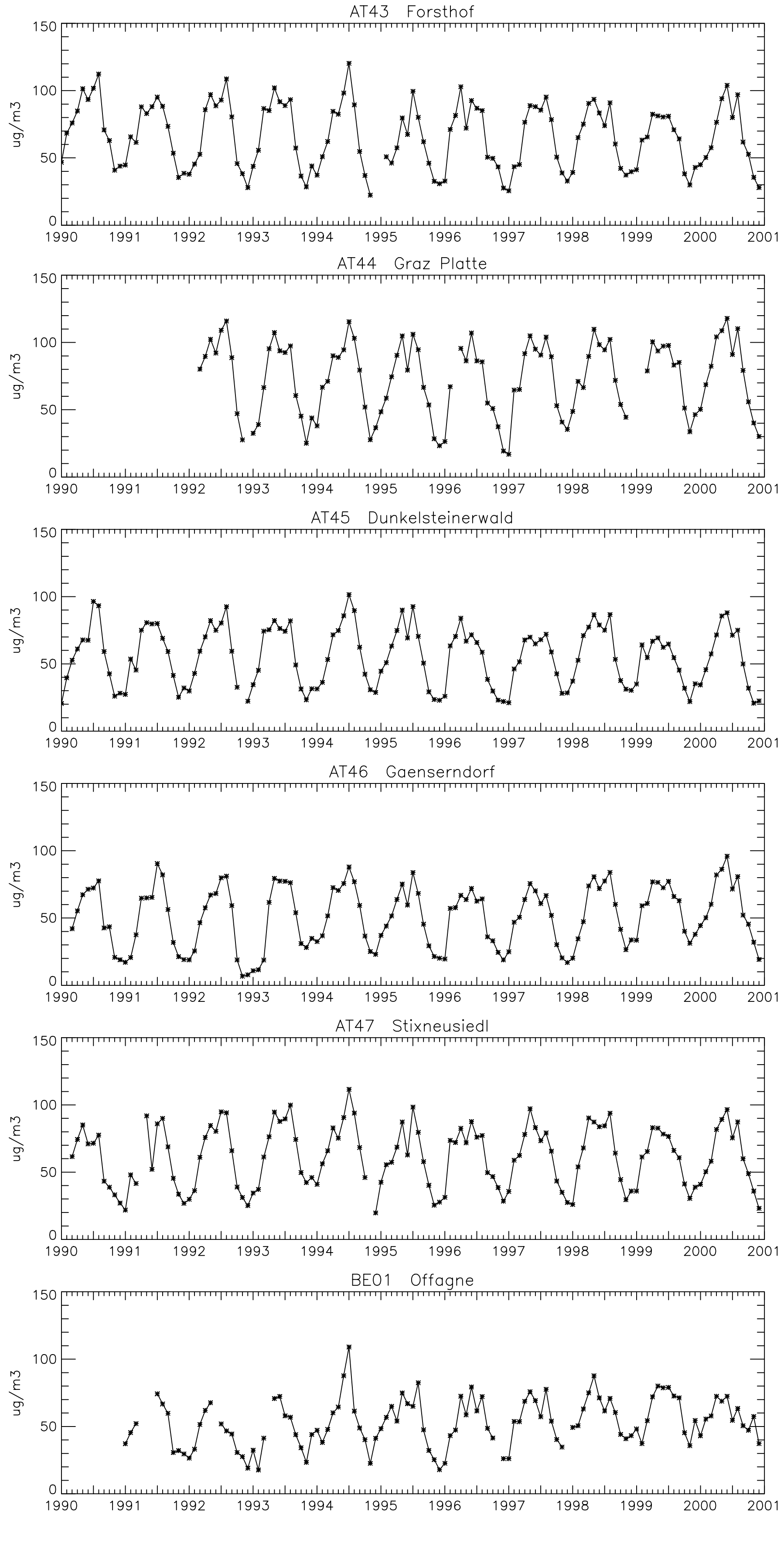


Figure 3.1, cont.



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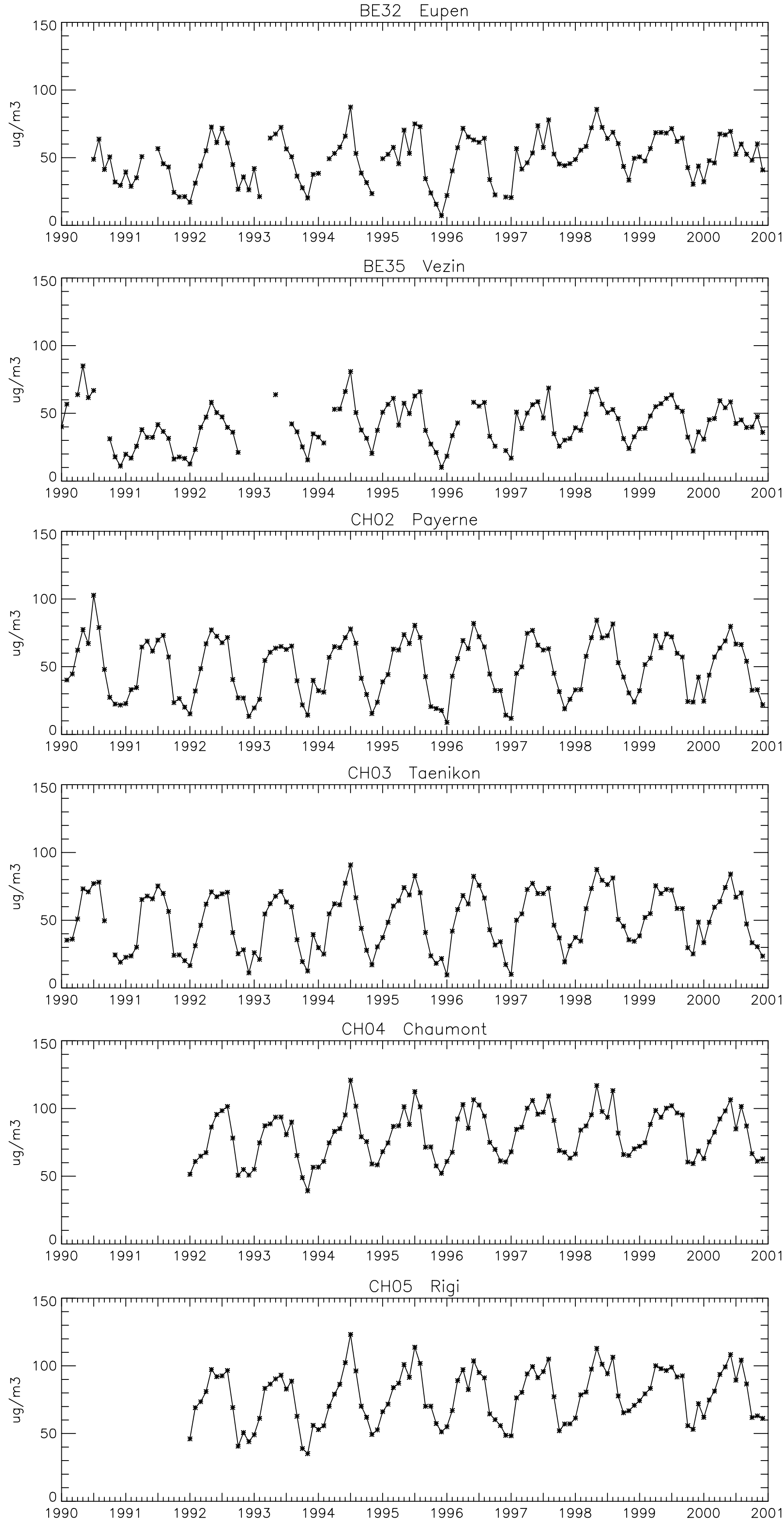

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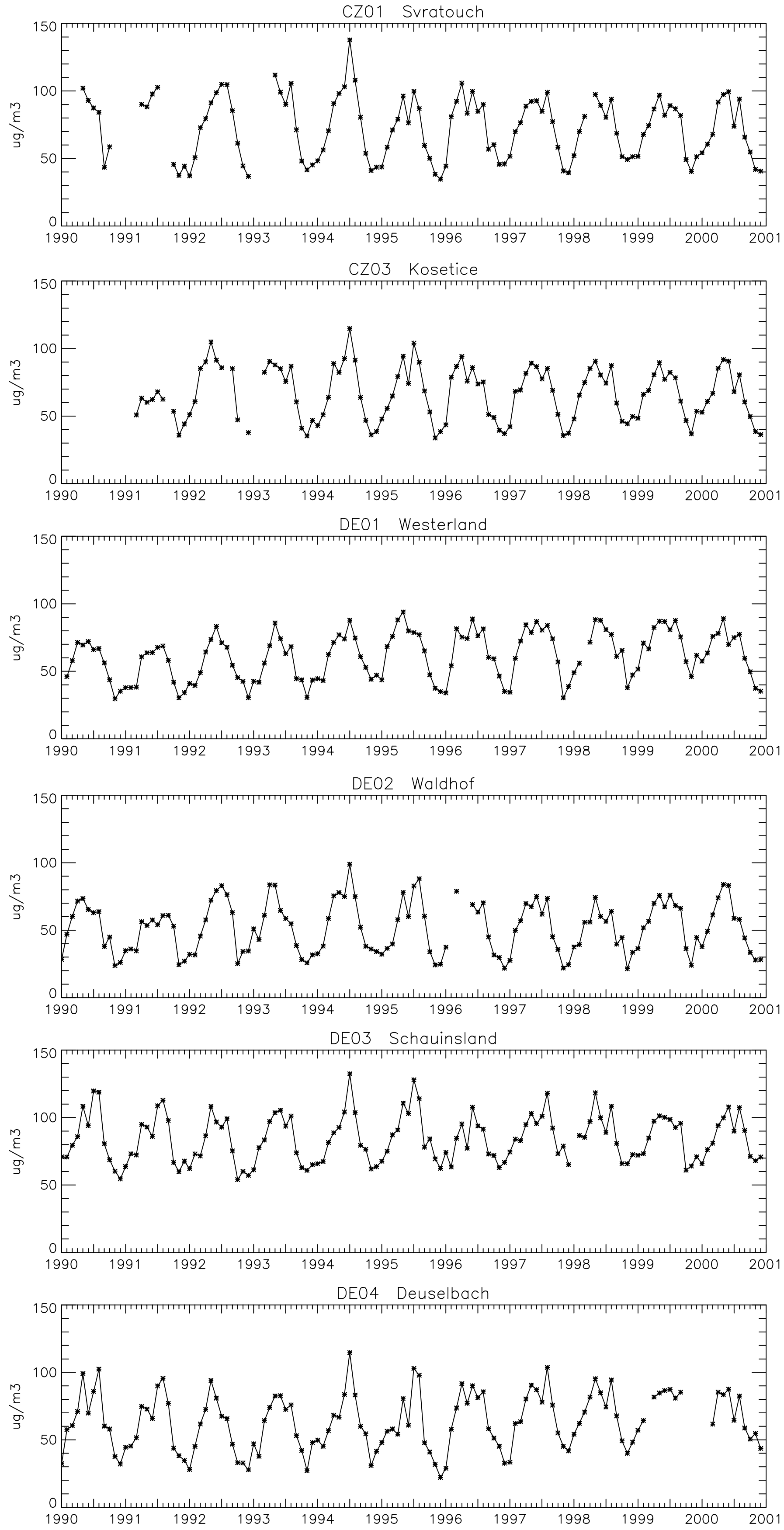

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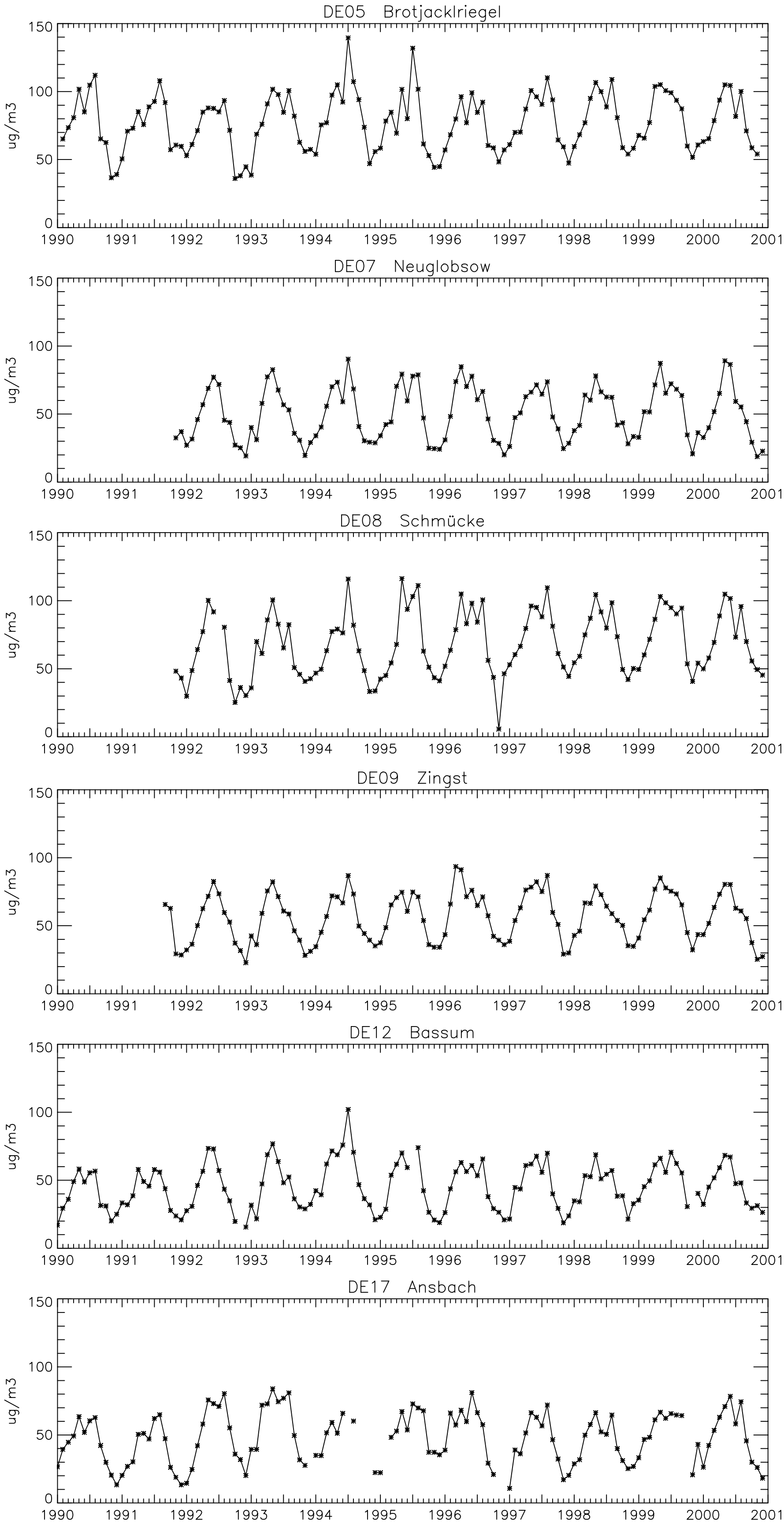

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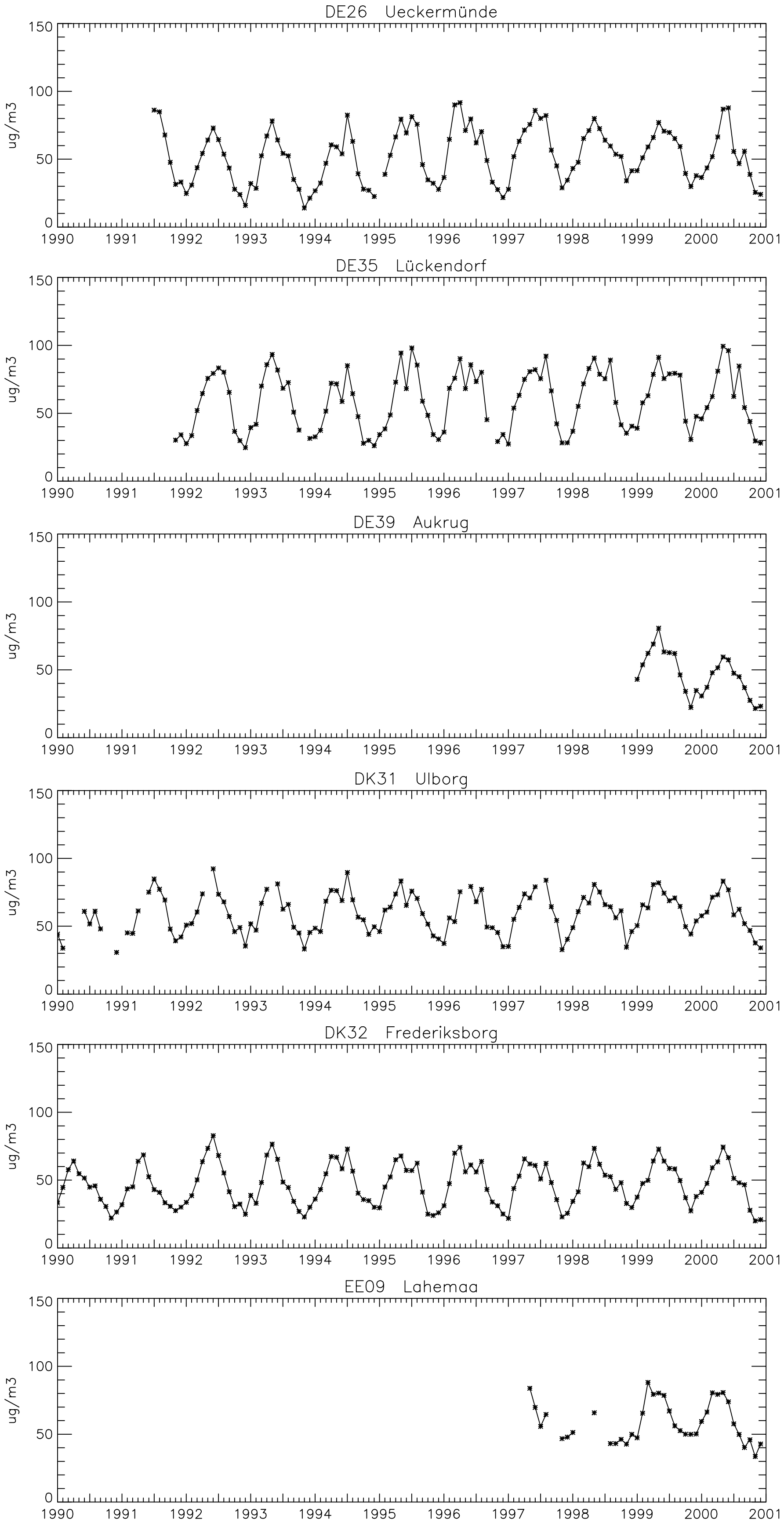

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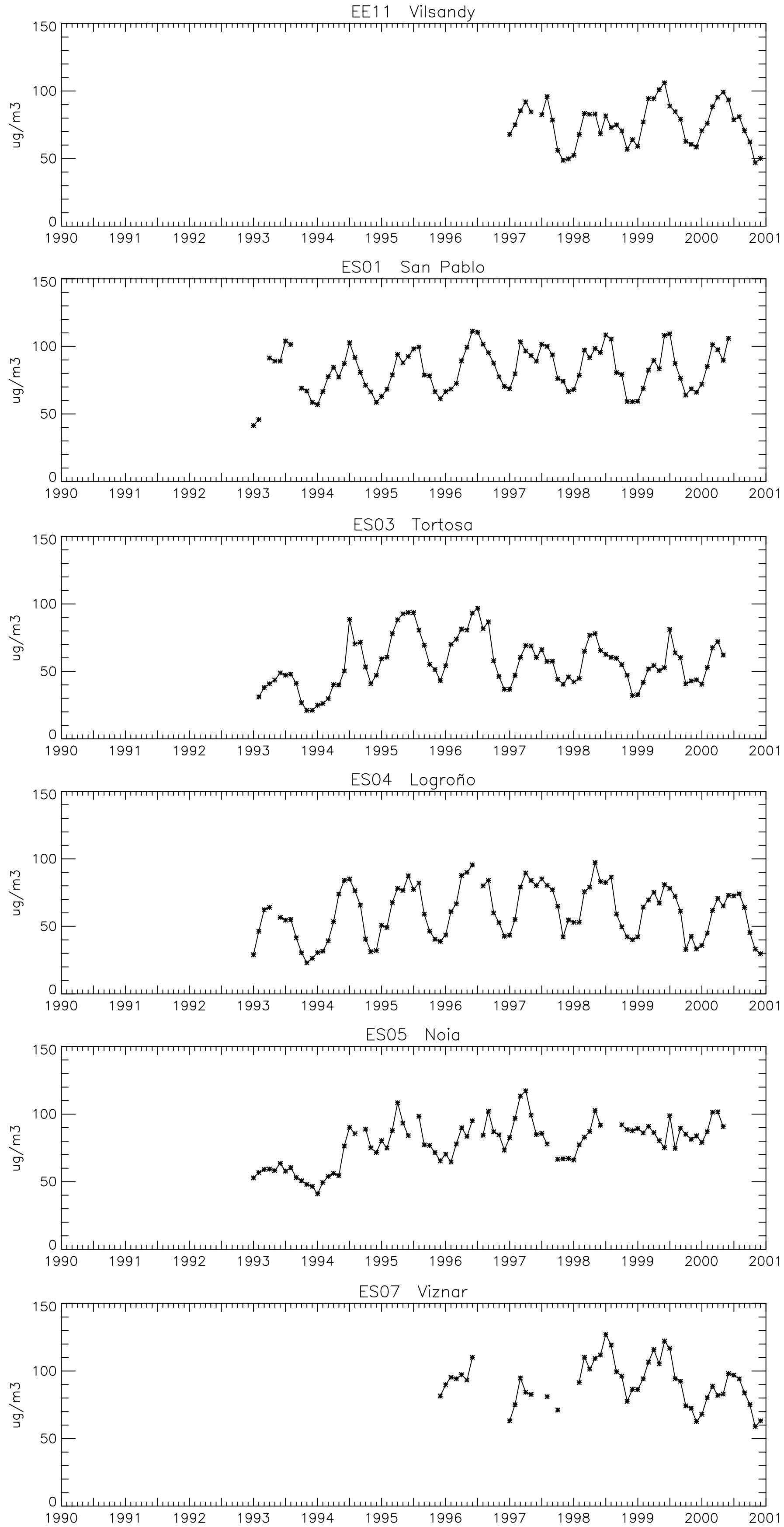

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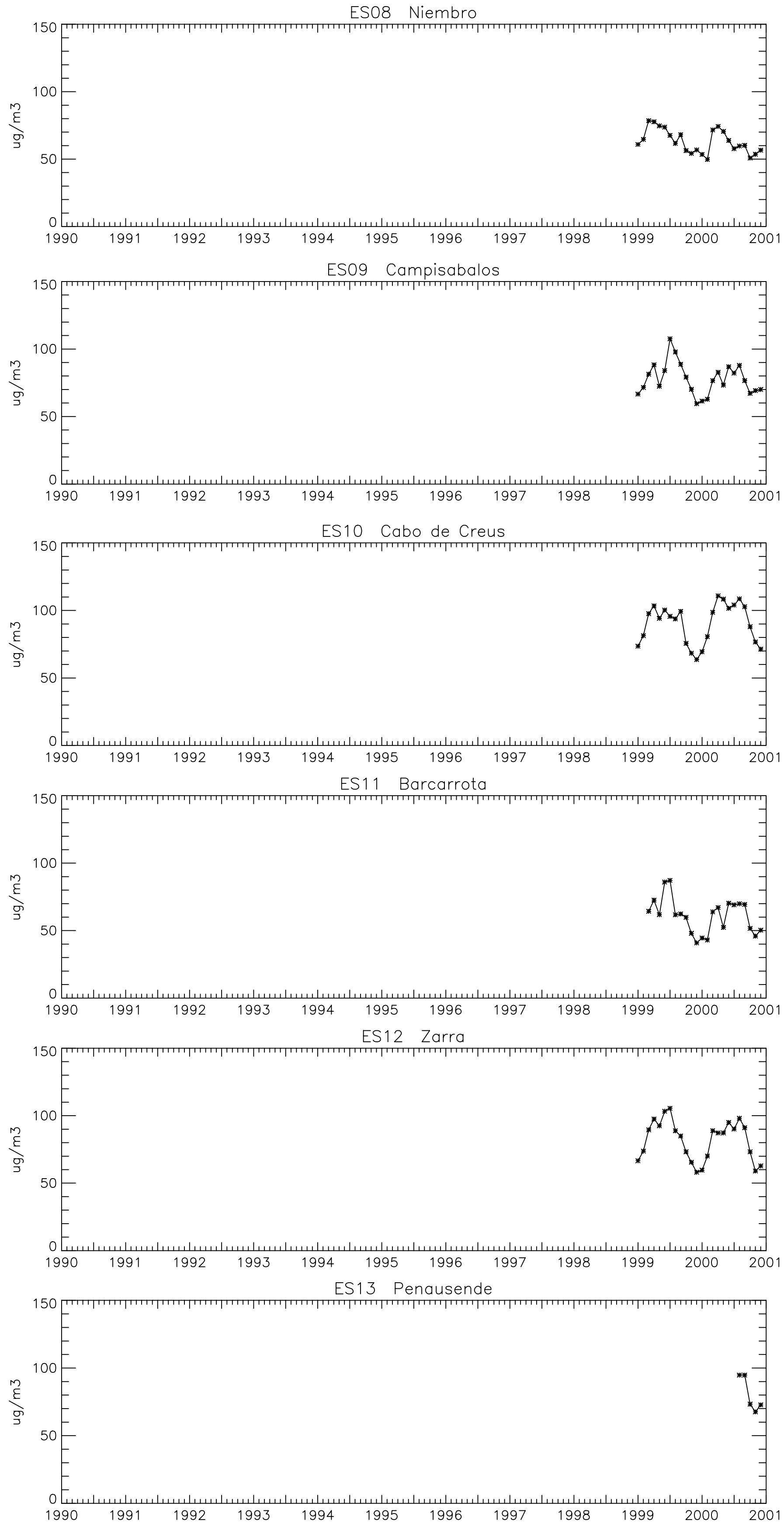

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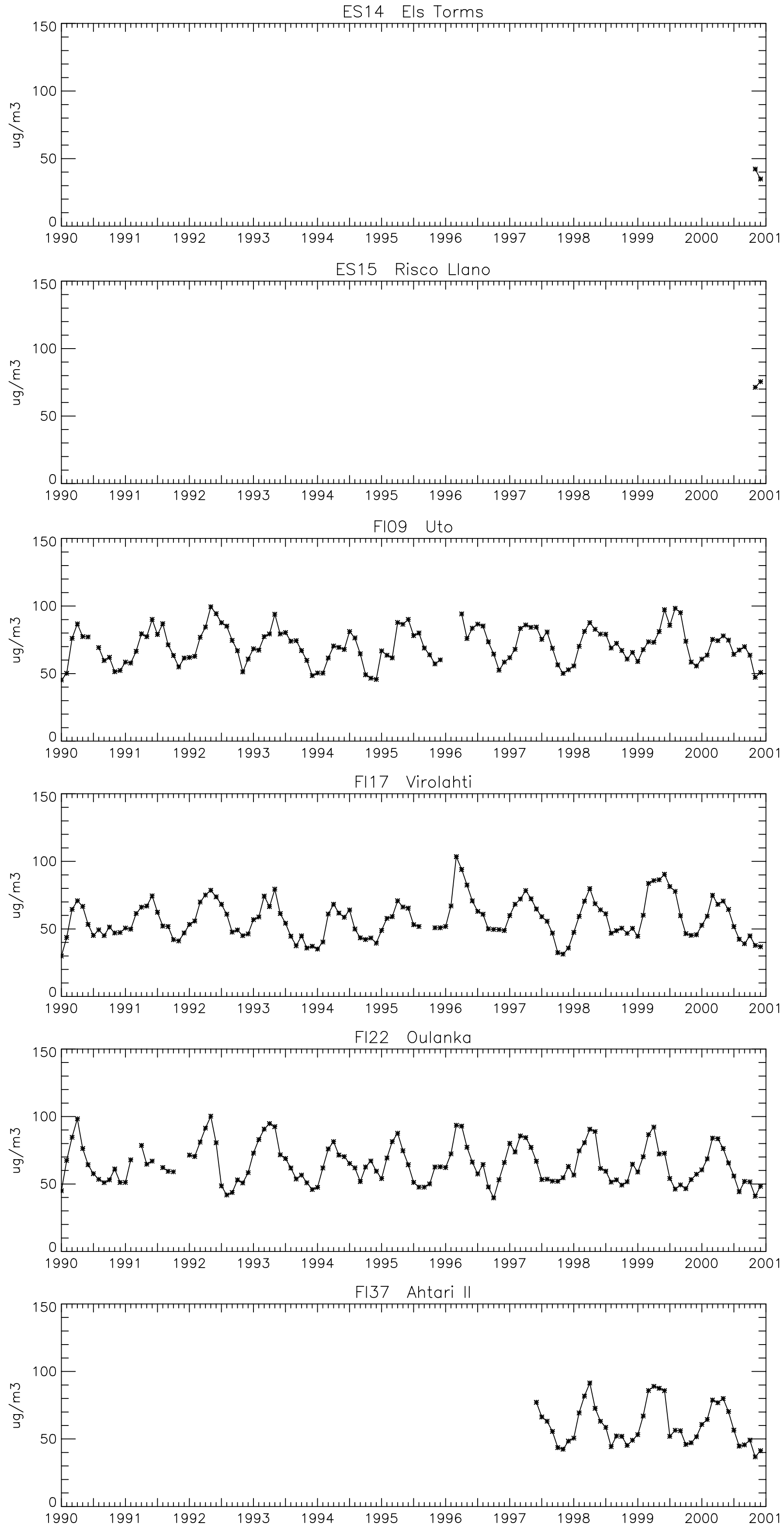

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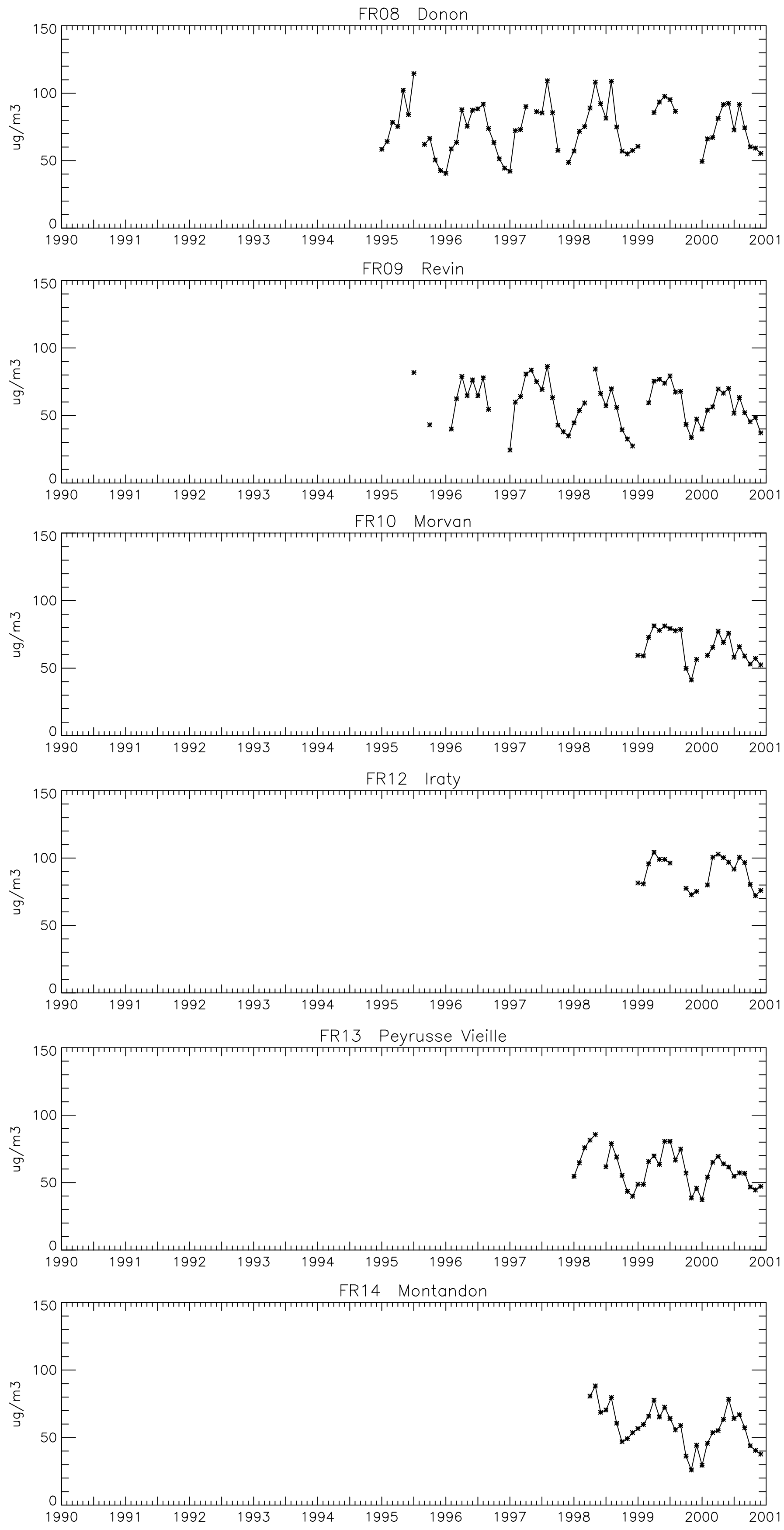

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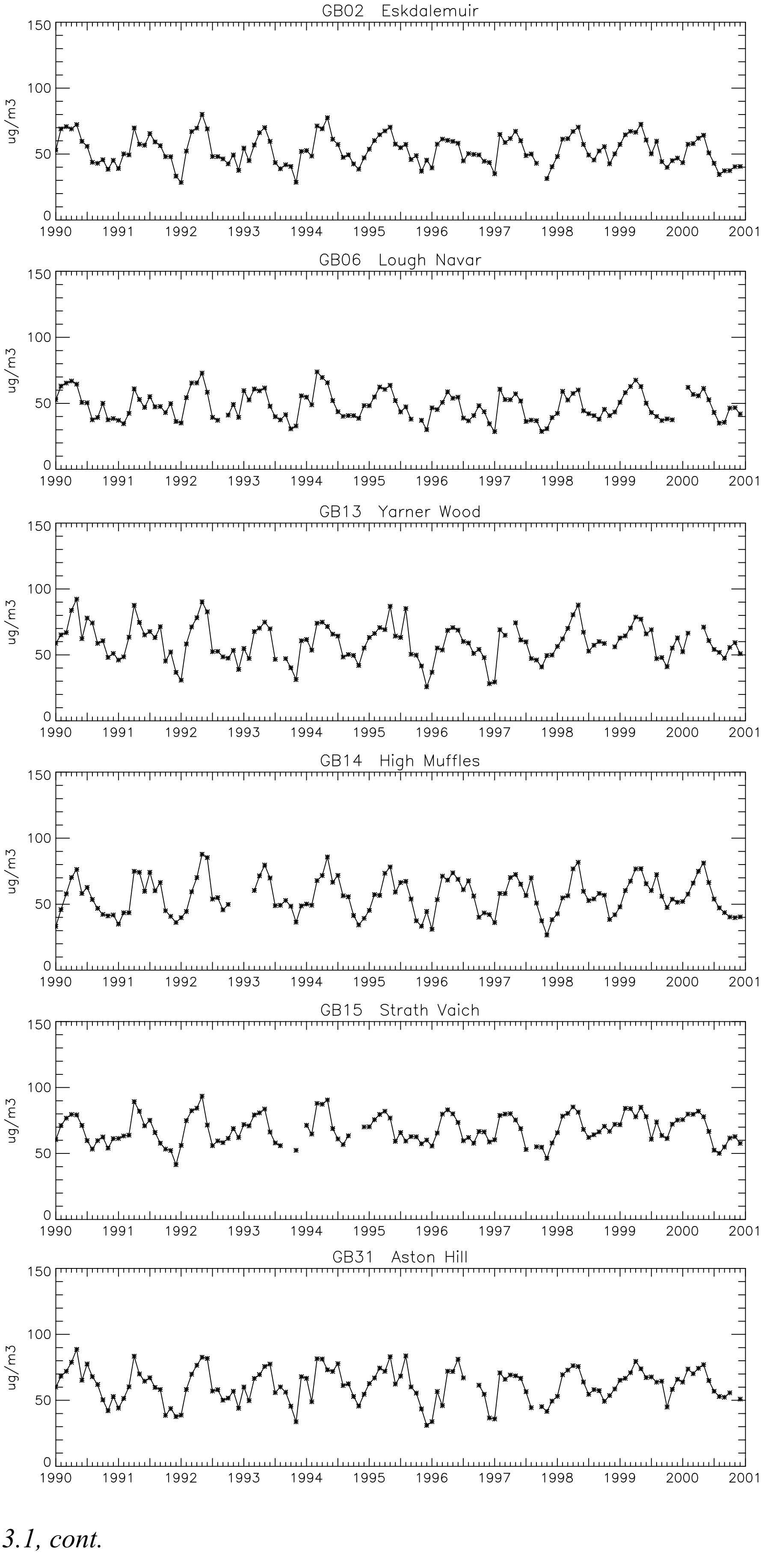

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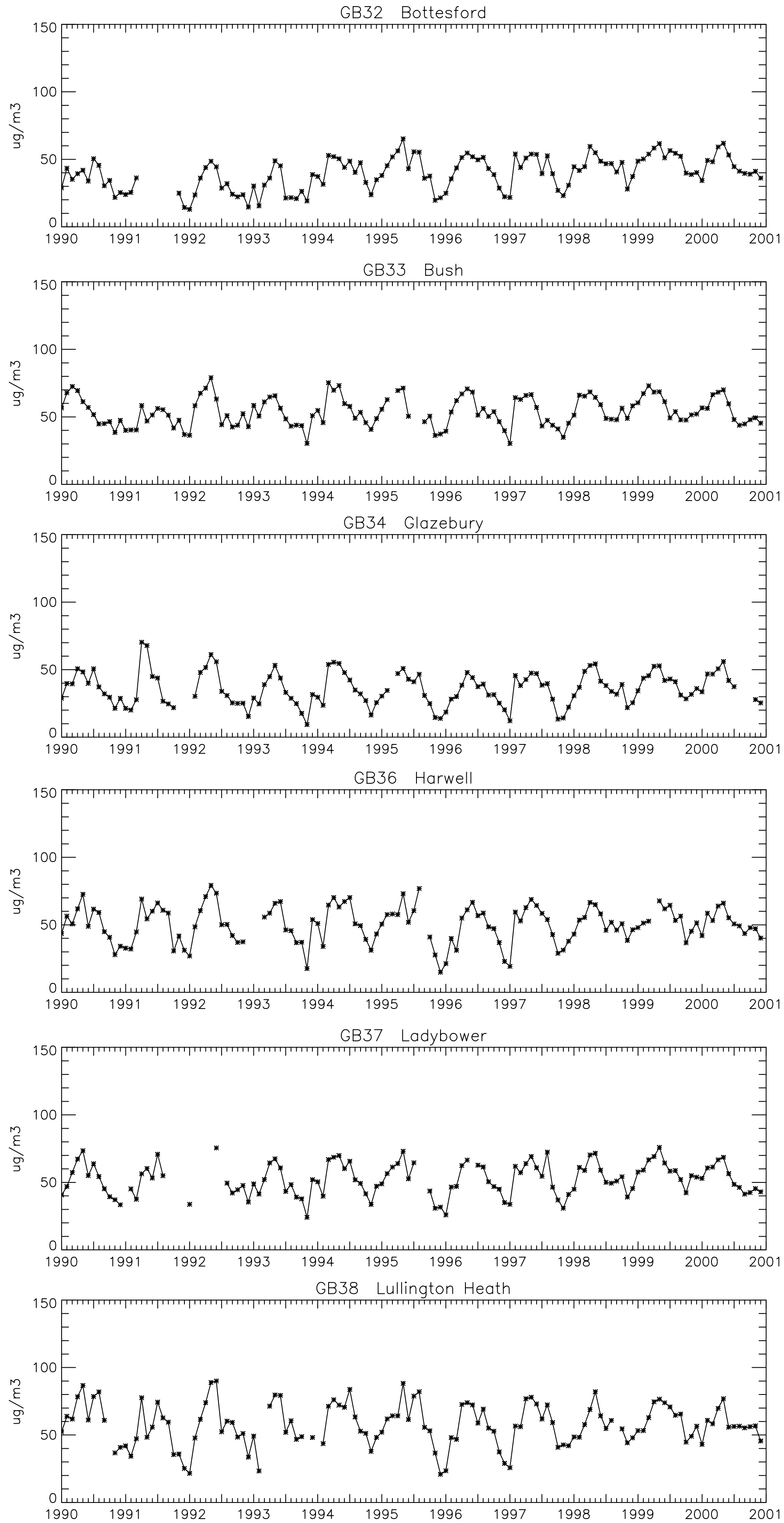

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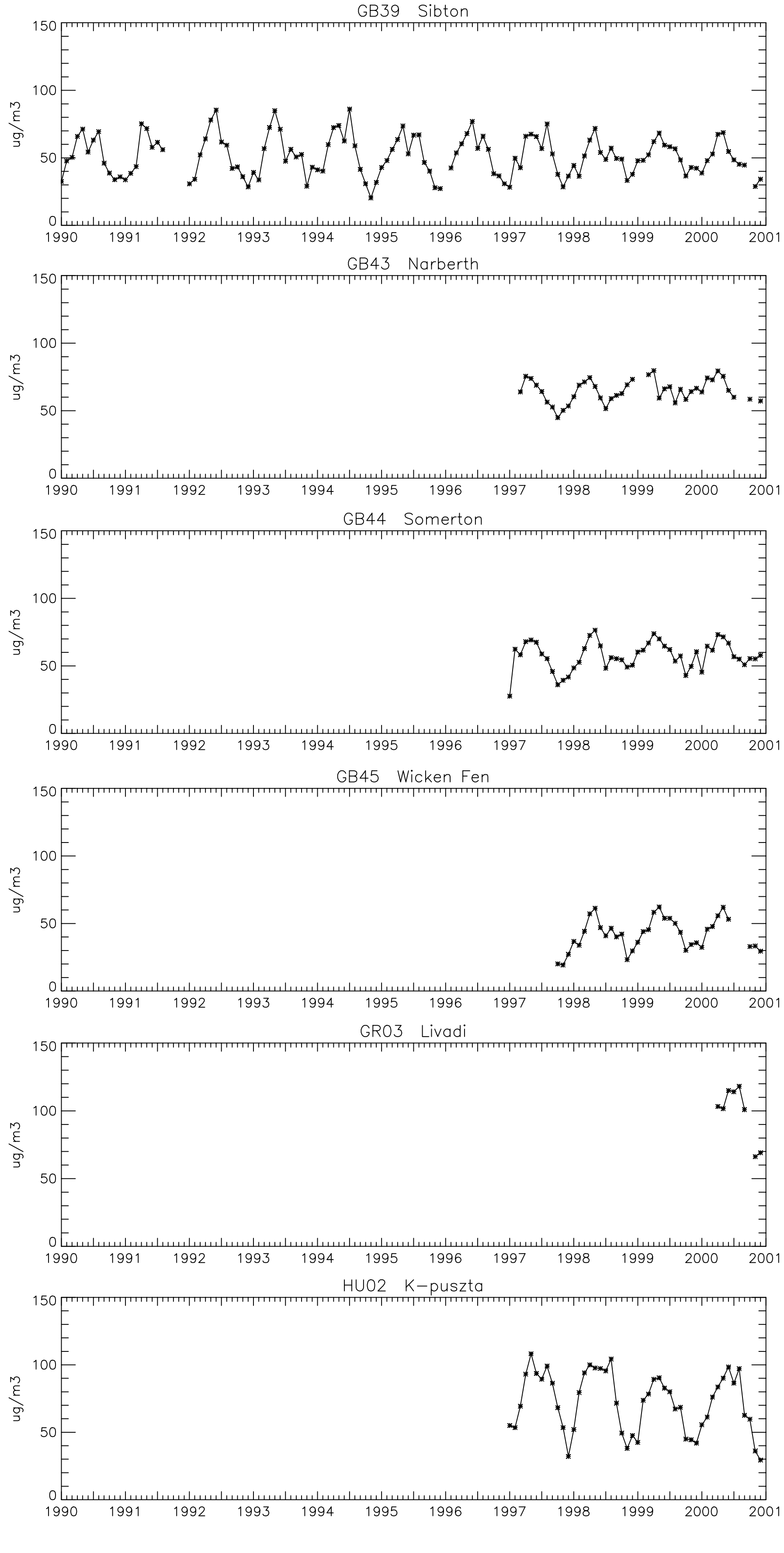

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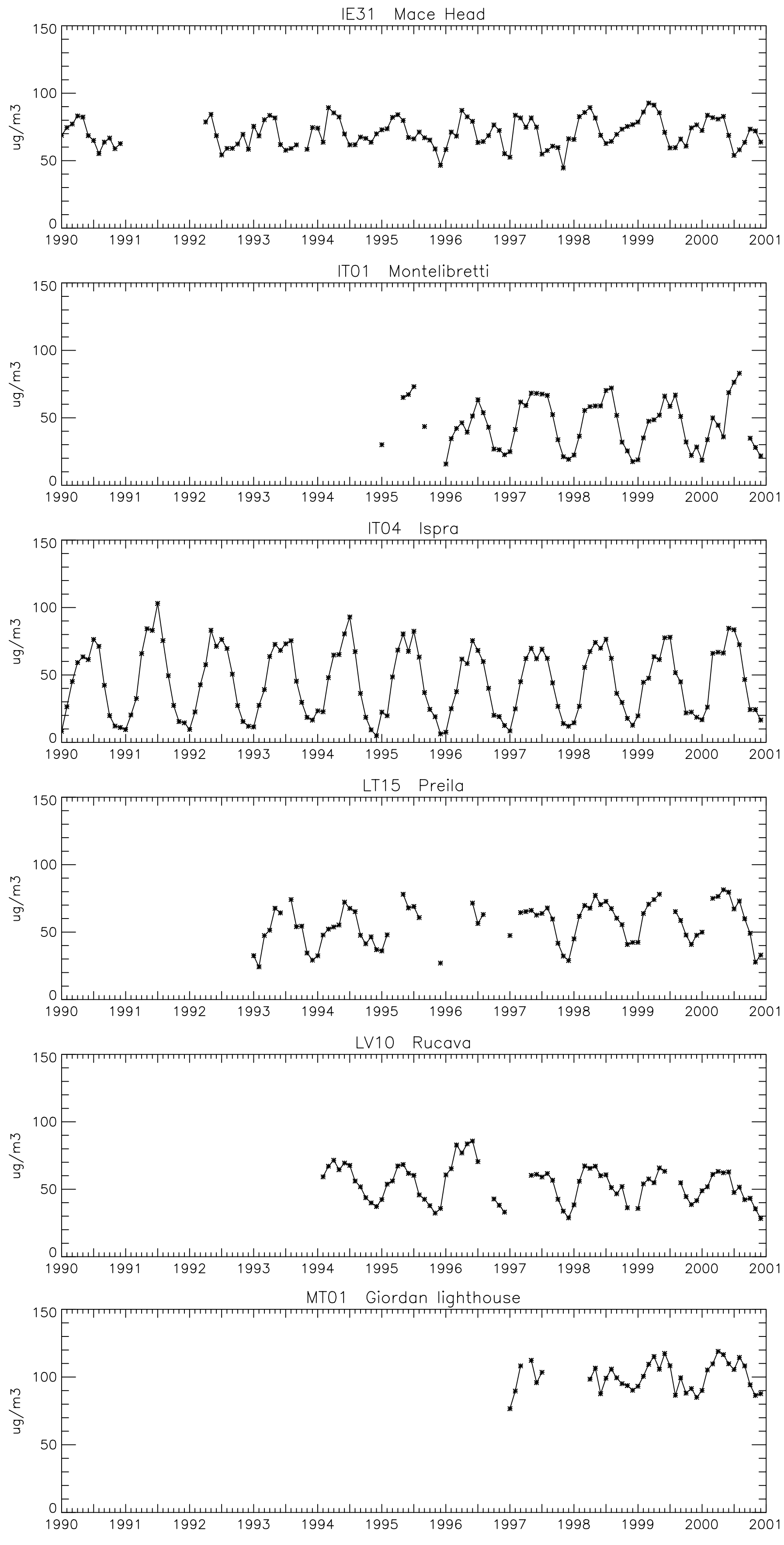

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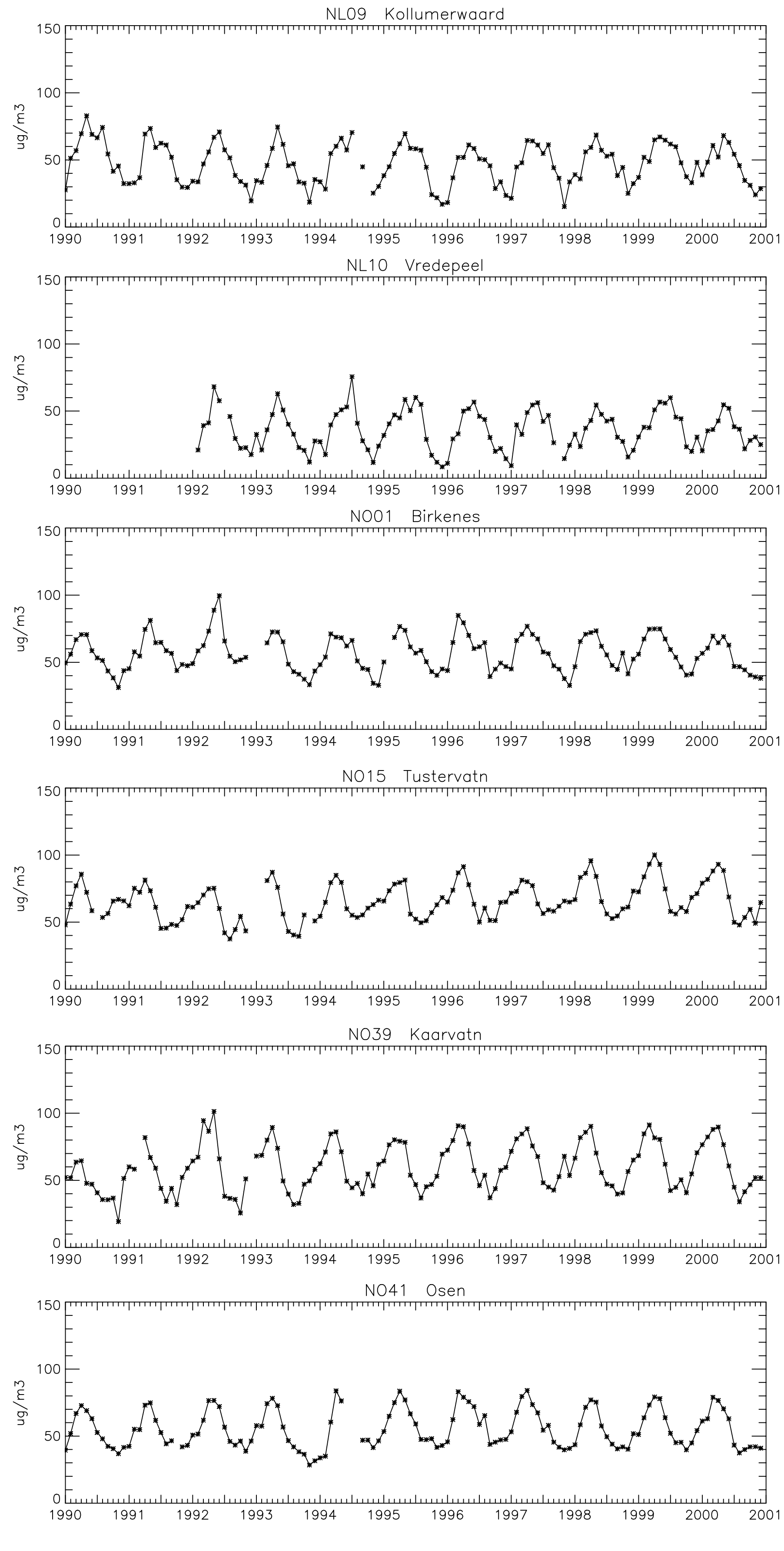

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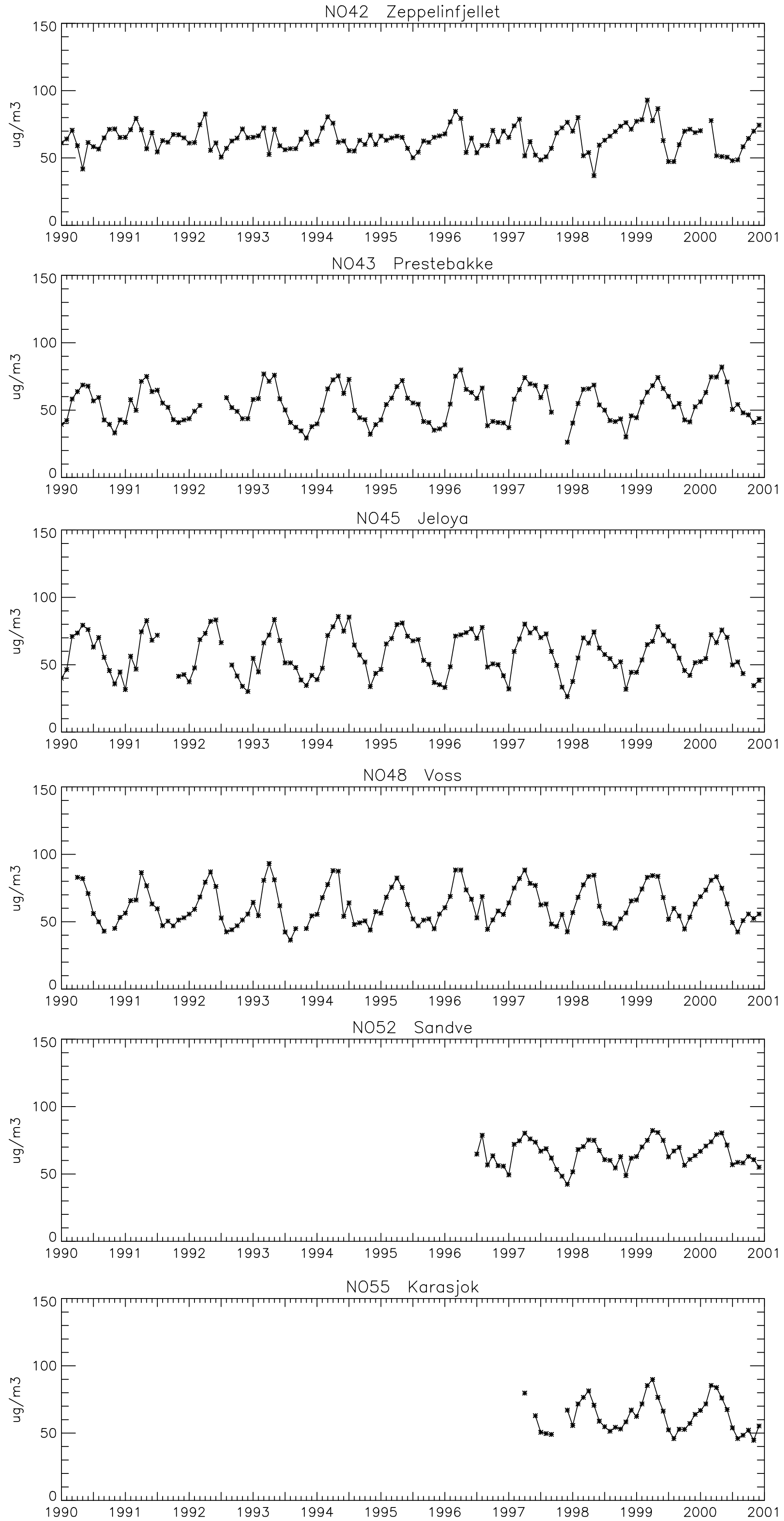

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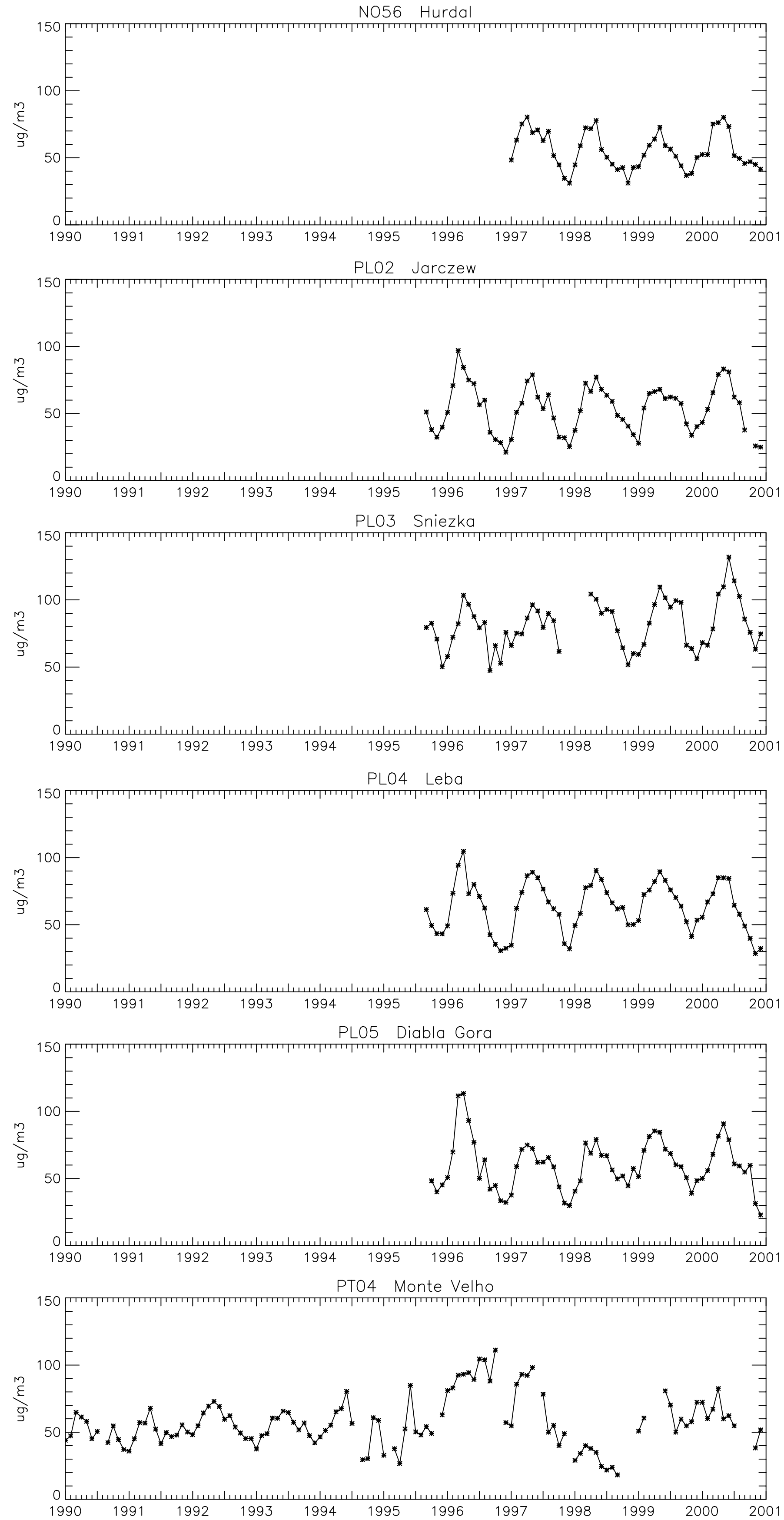

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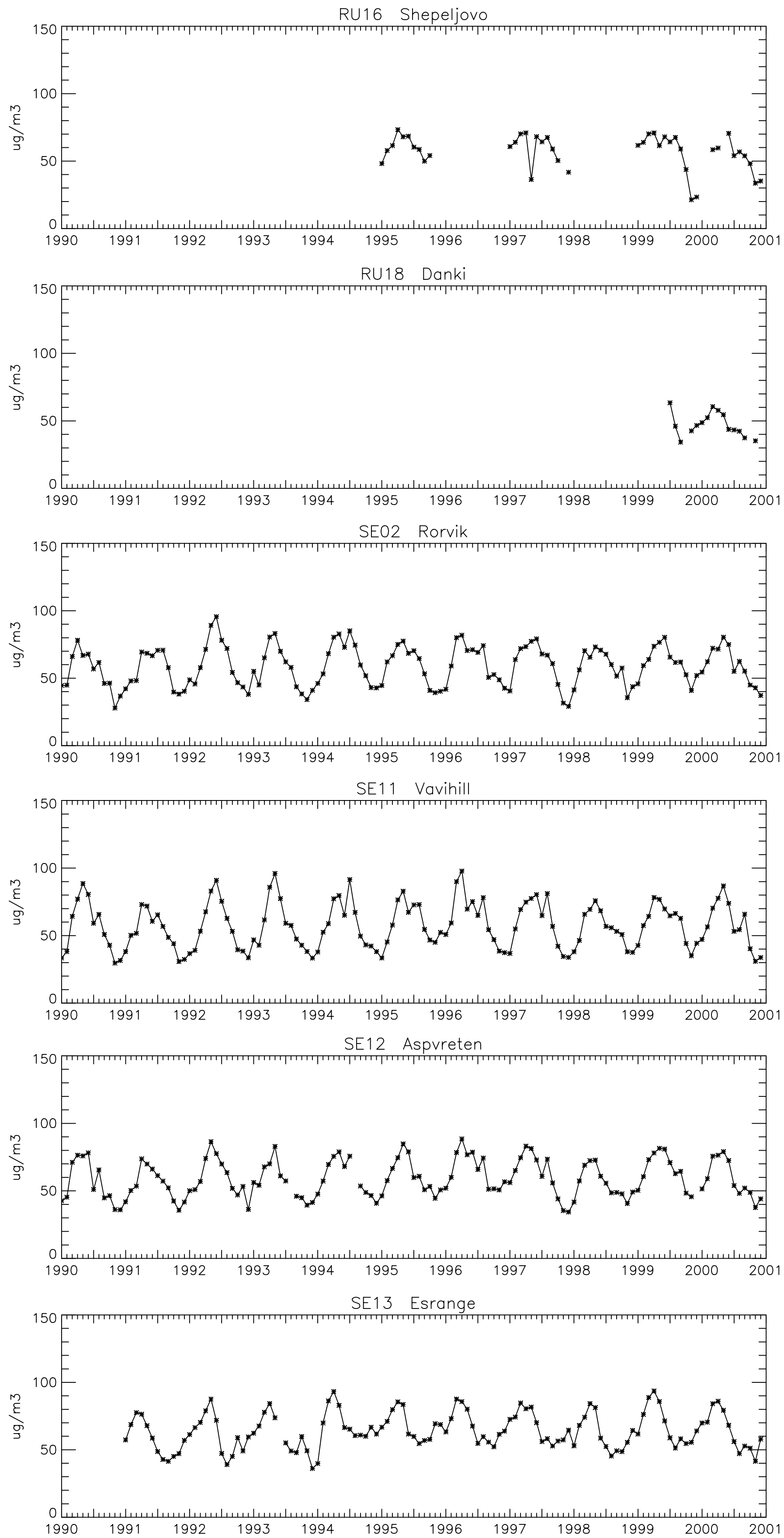

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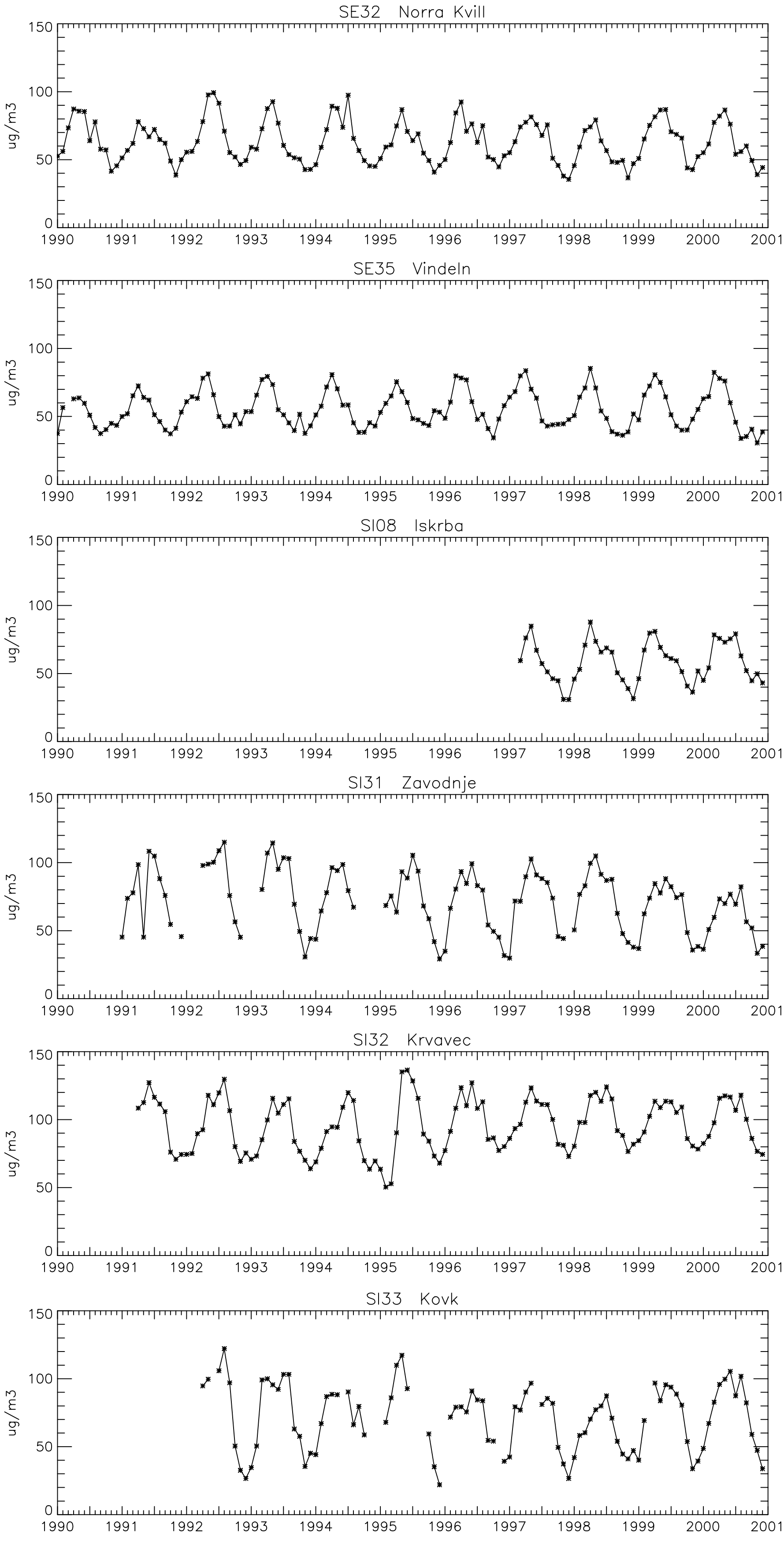

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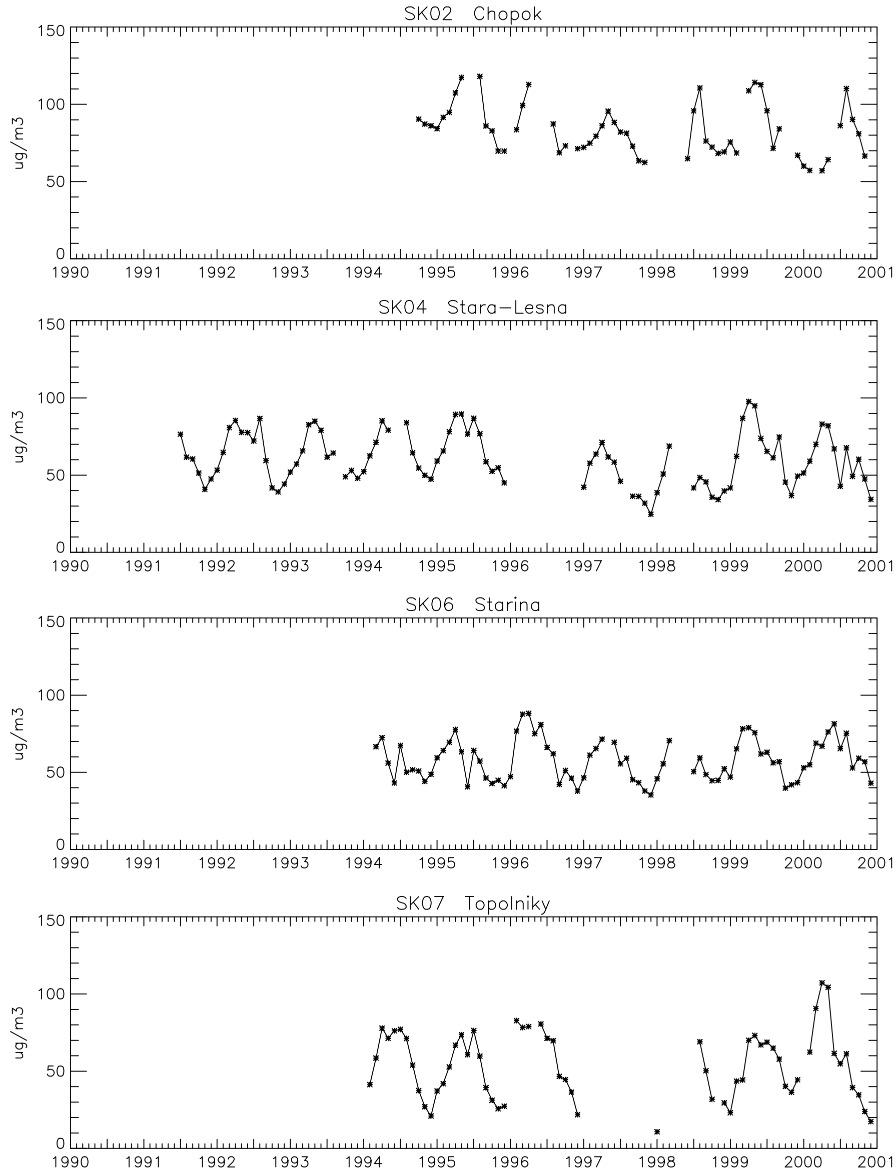


Figure 3.1, cont.

Annex 4

Diurnal variation, April–September 2000

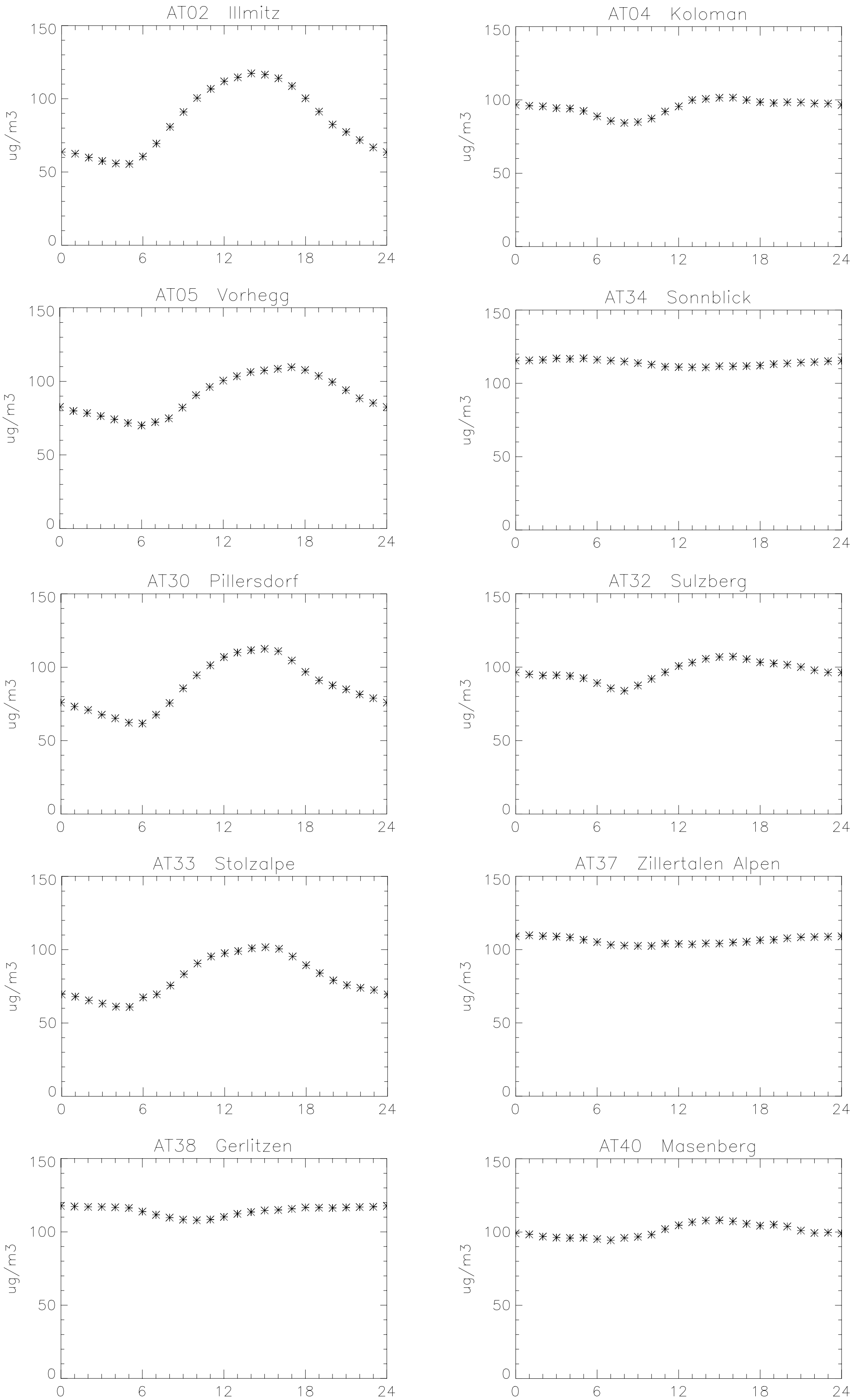


Figure 4.1: Diurnal variation, April–September 2000.

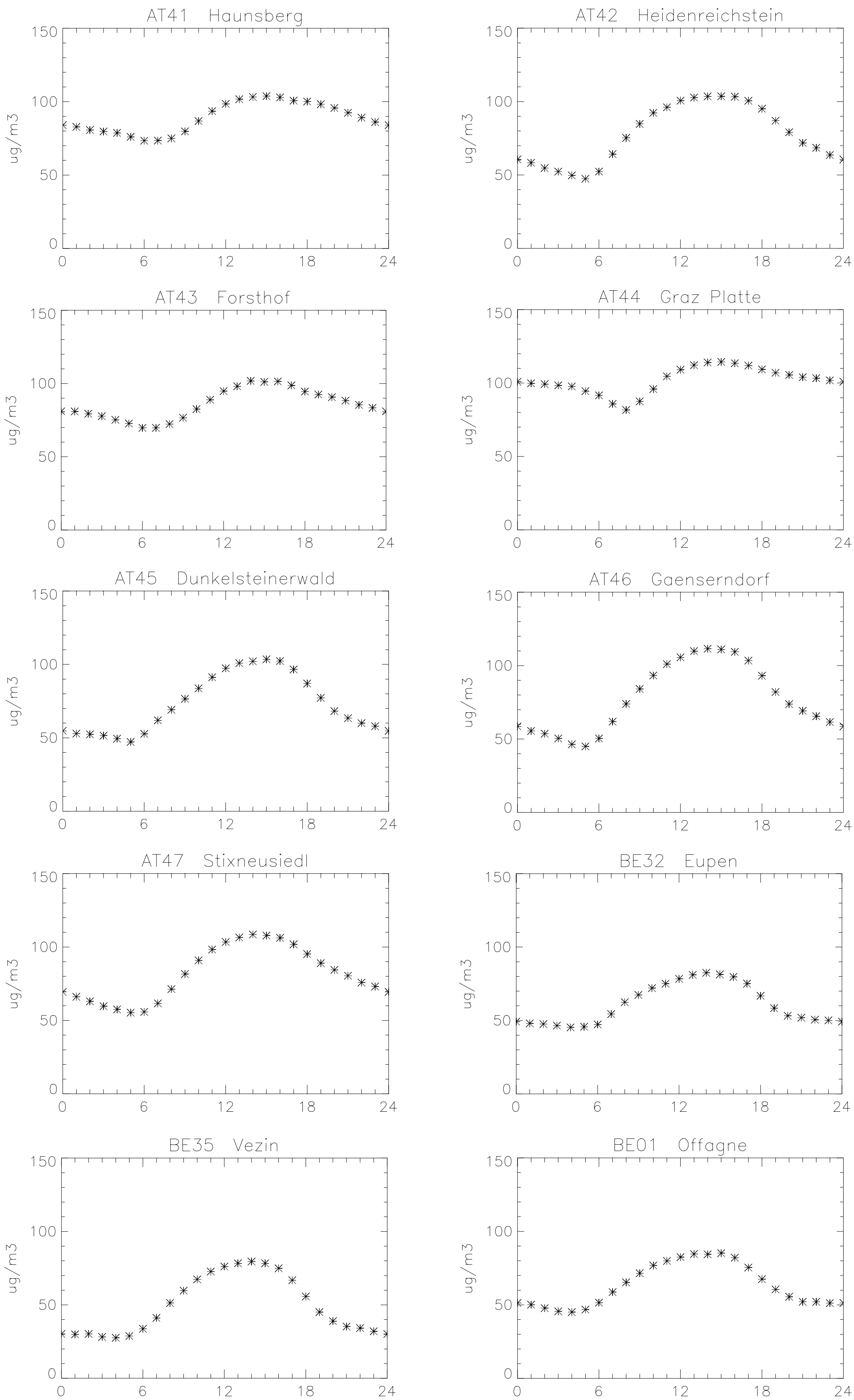
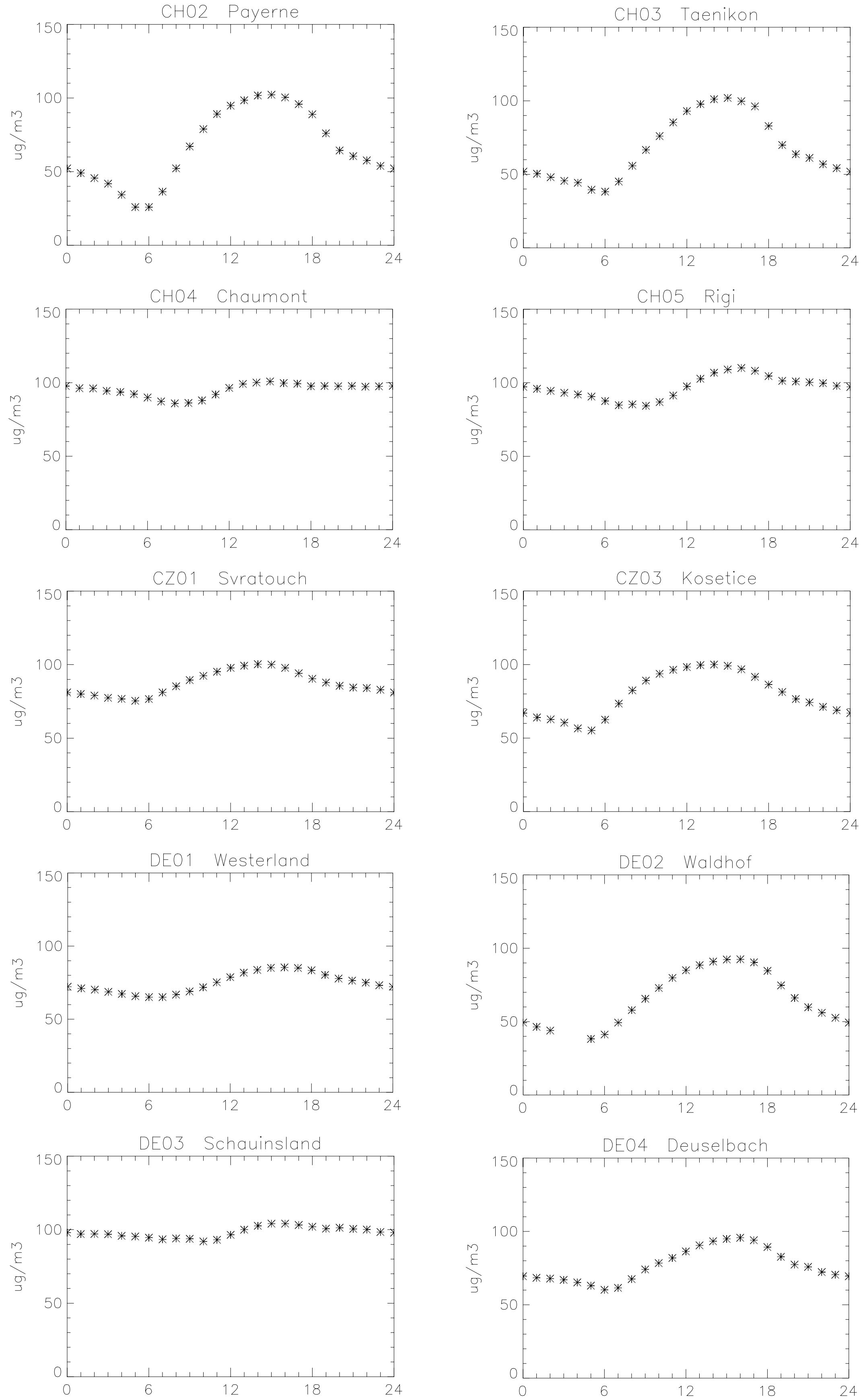


Figure 4.1, cont.



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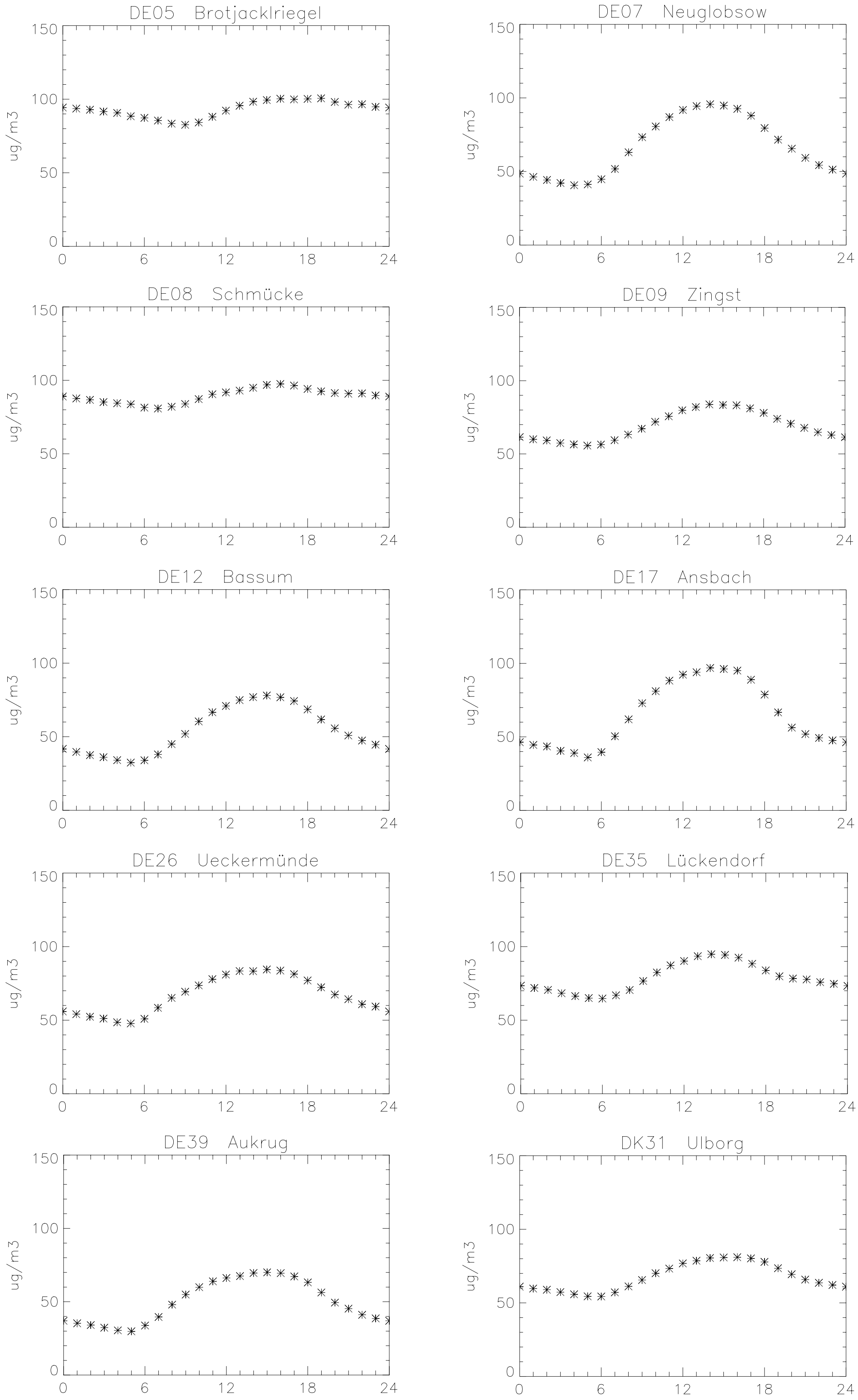

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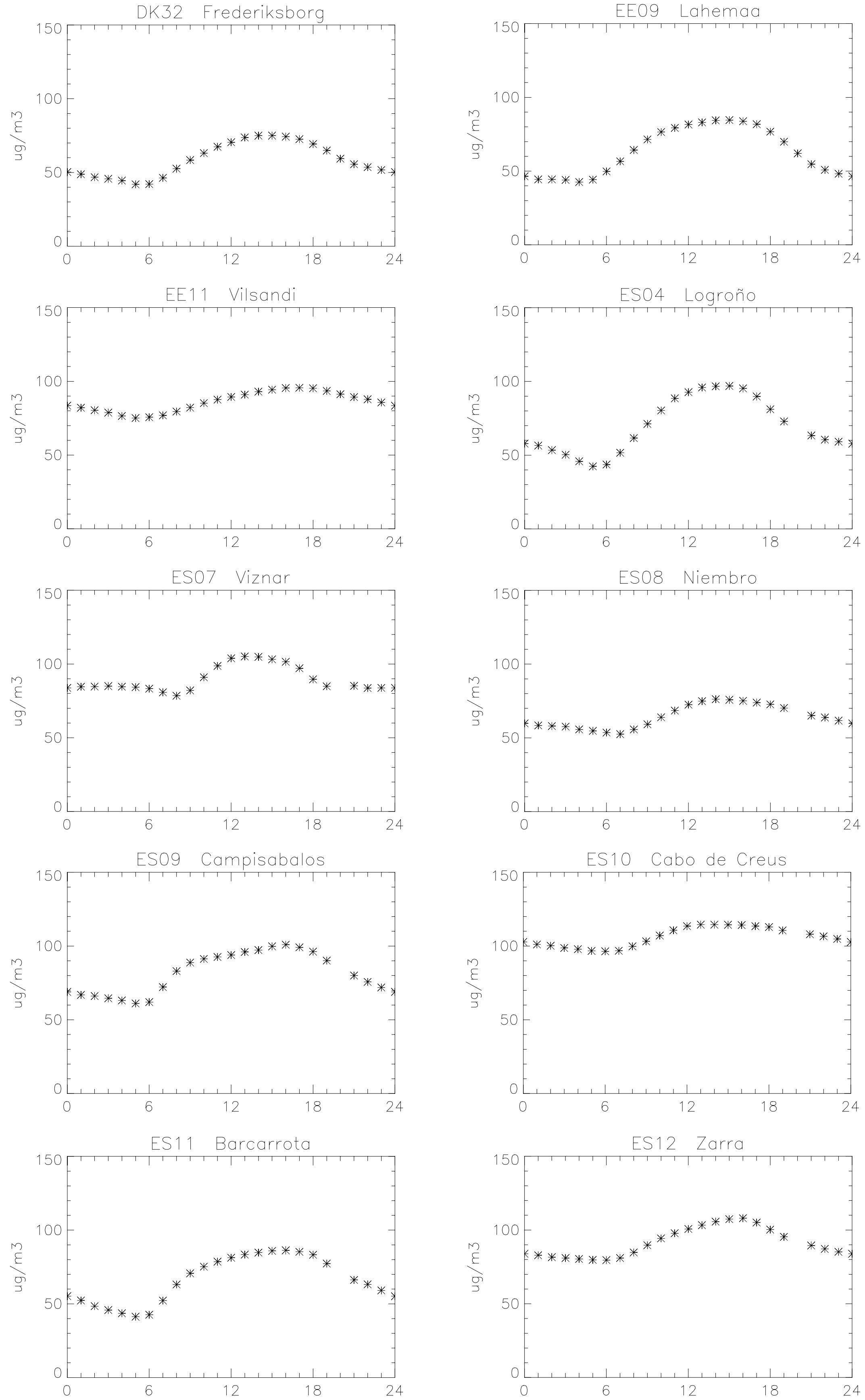

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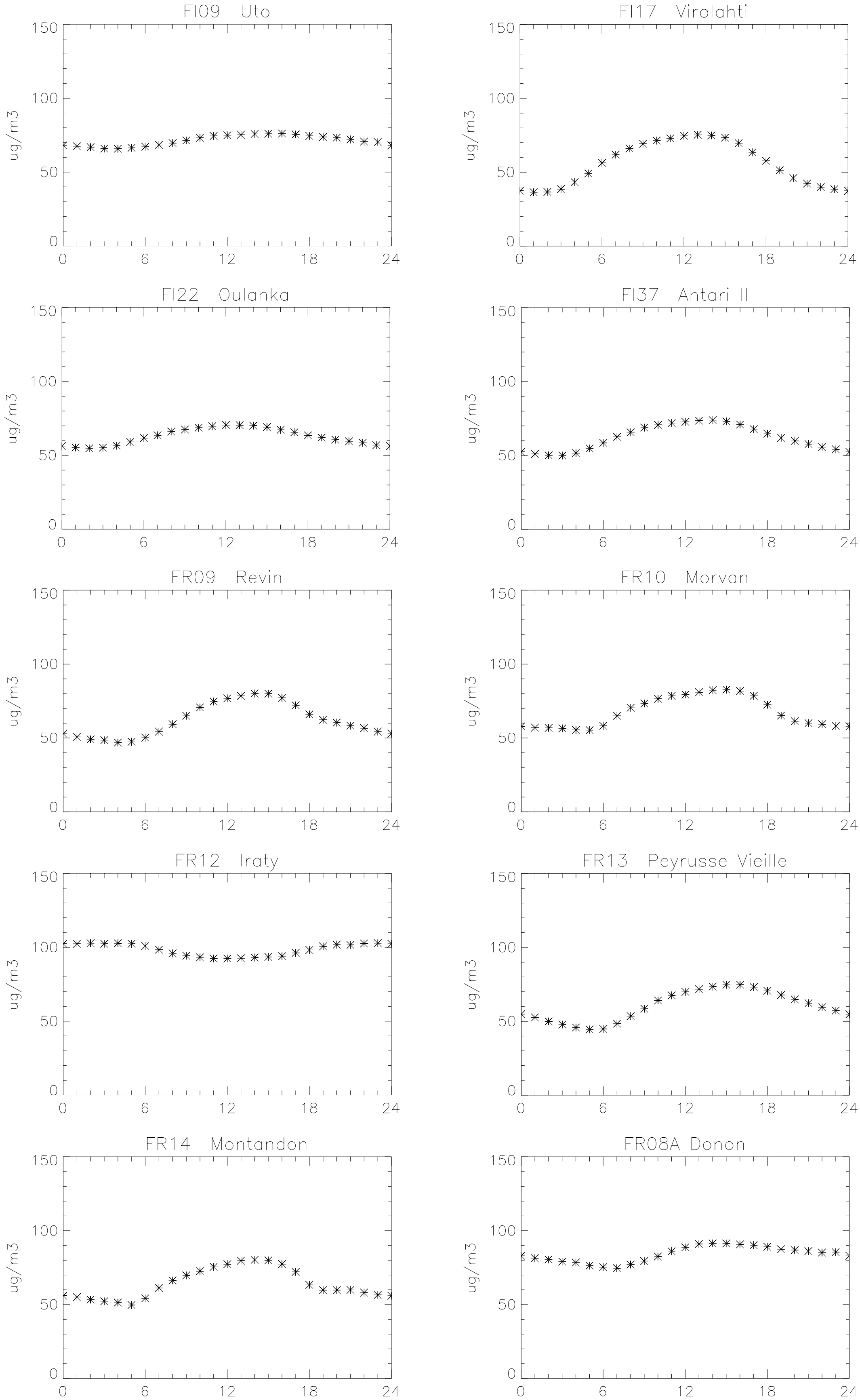

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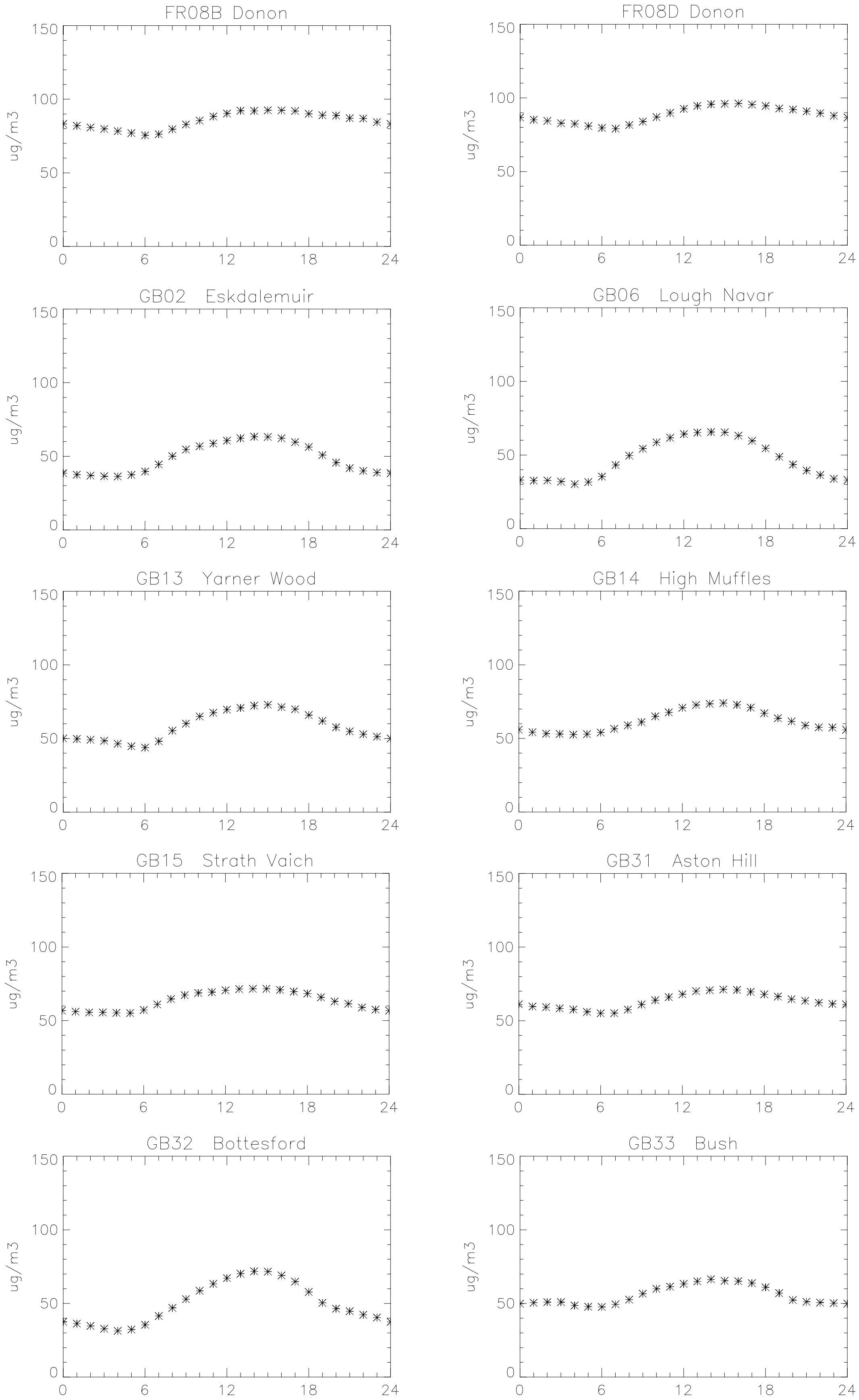

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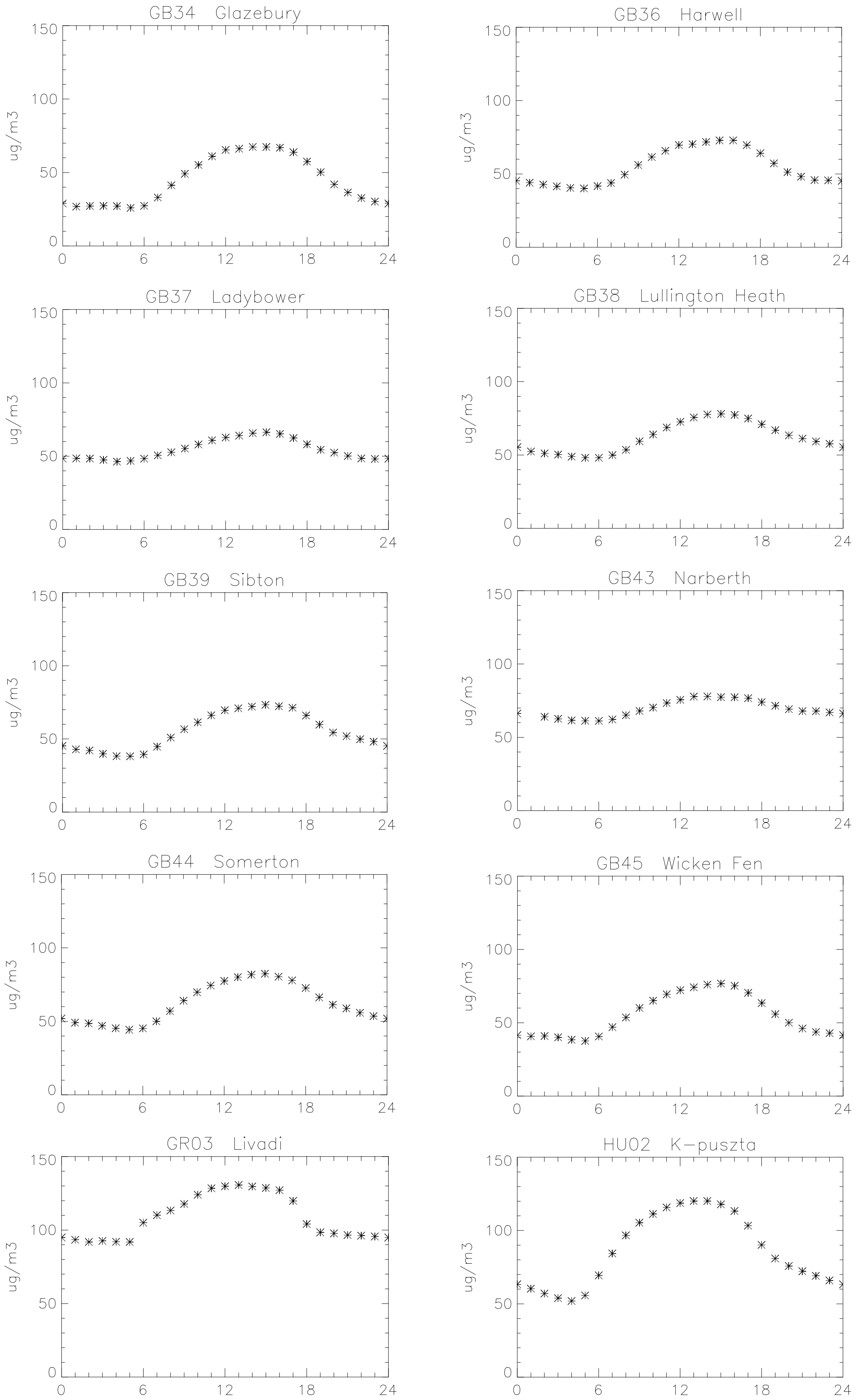

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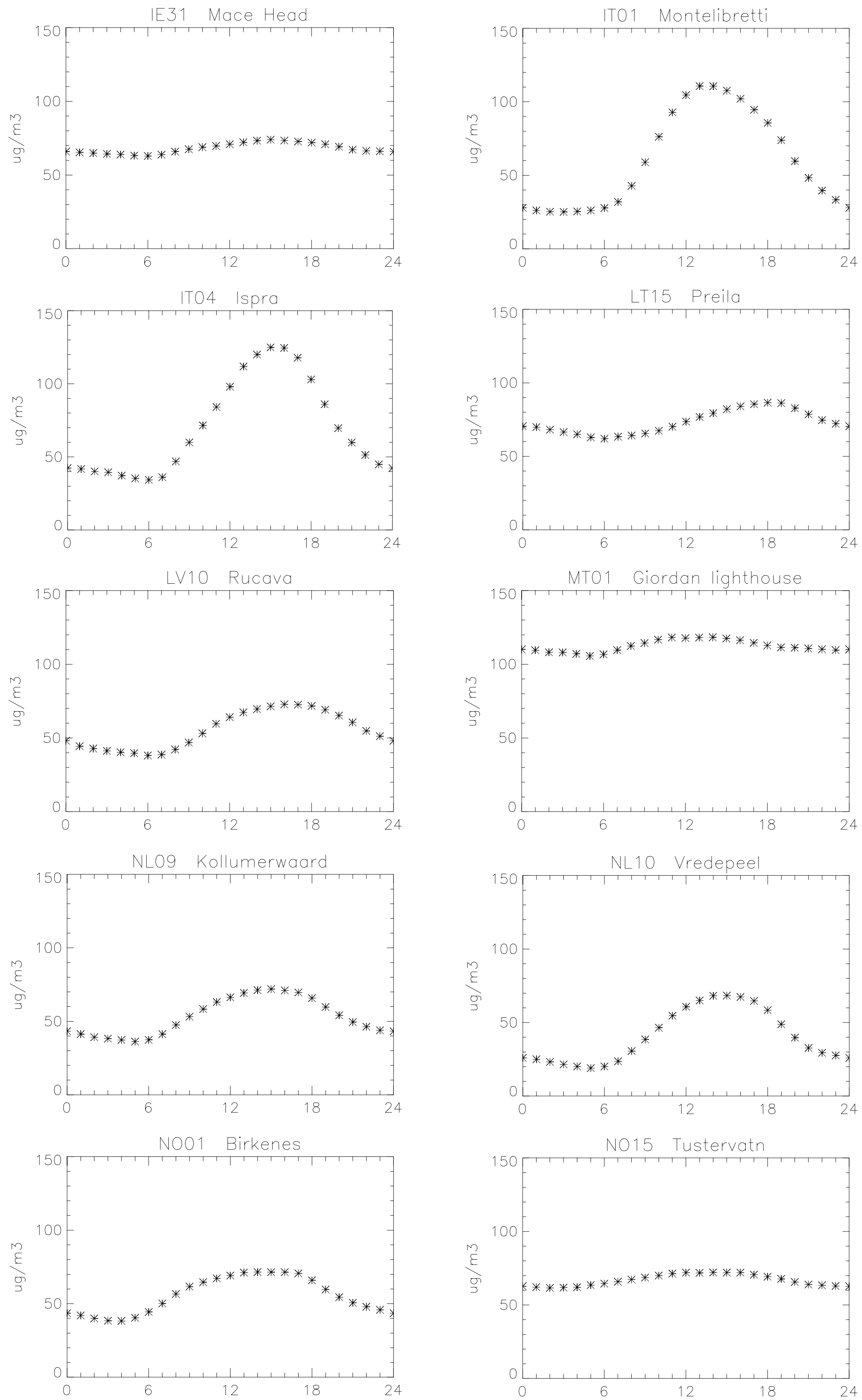

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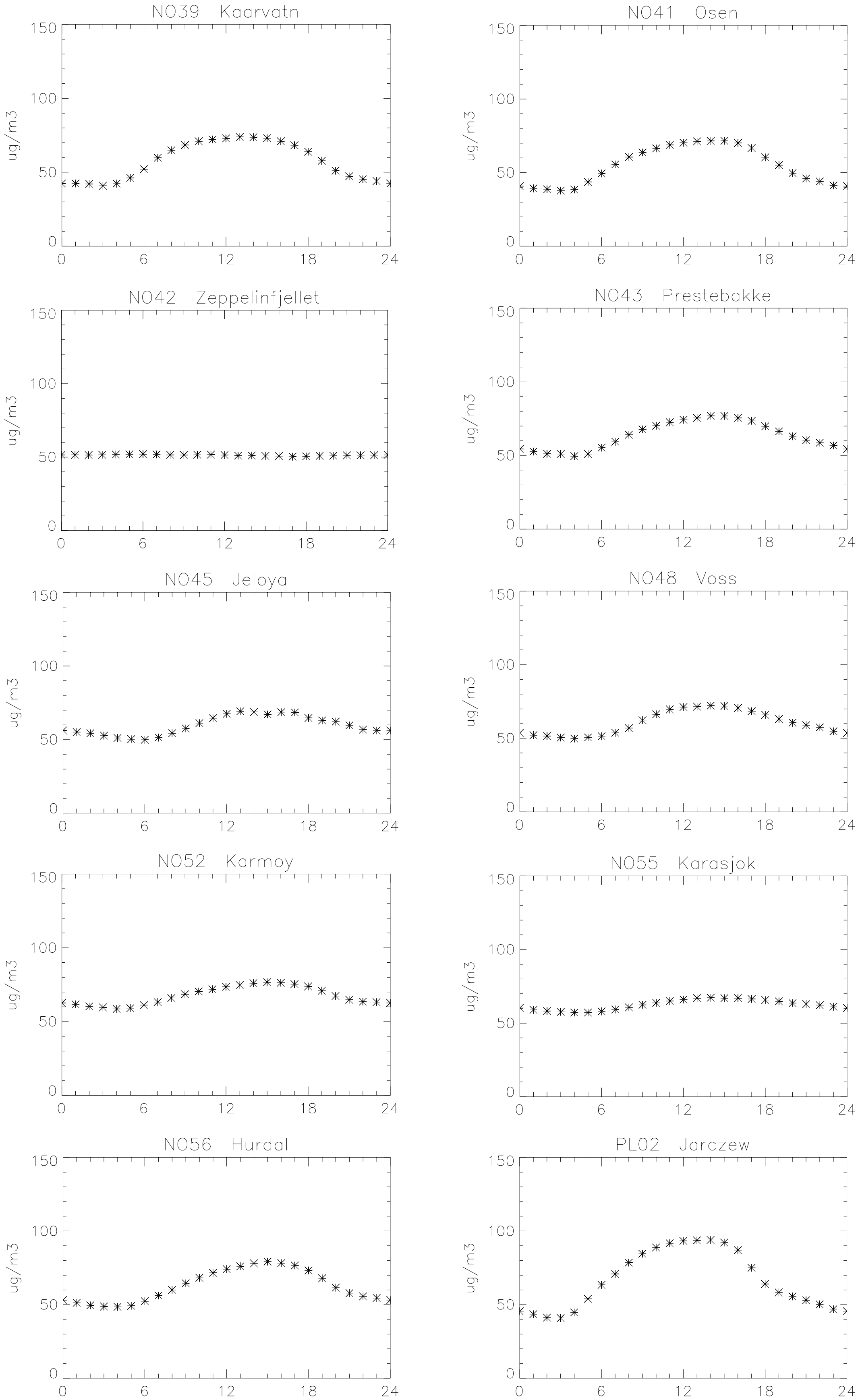

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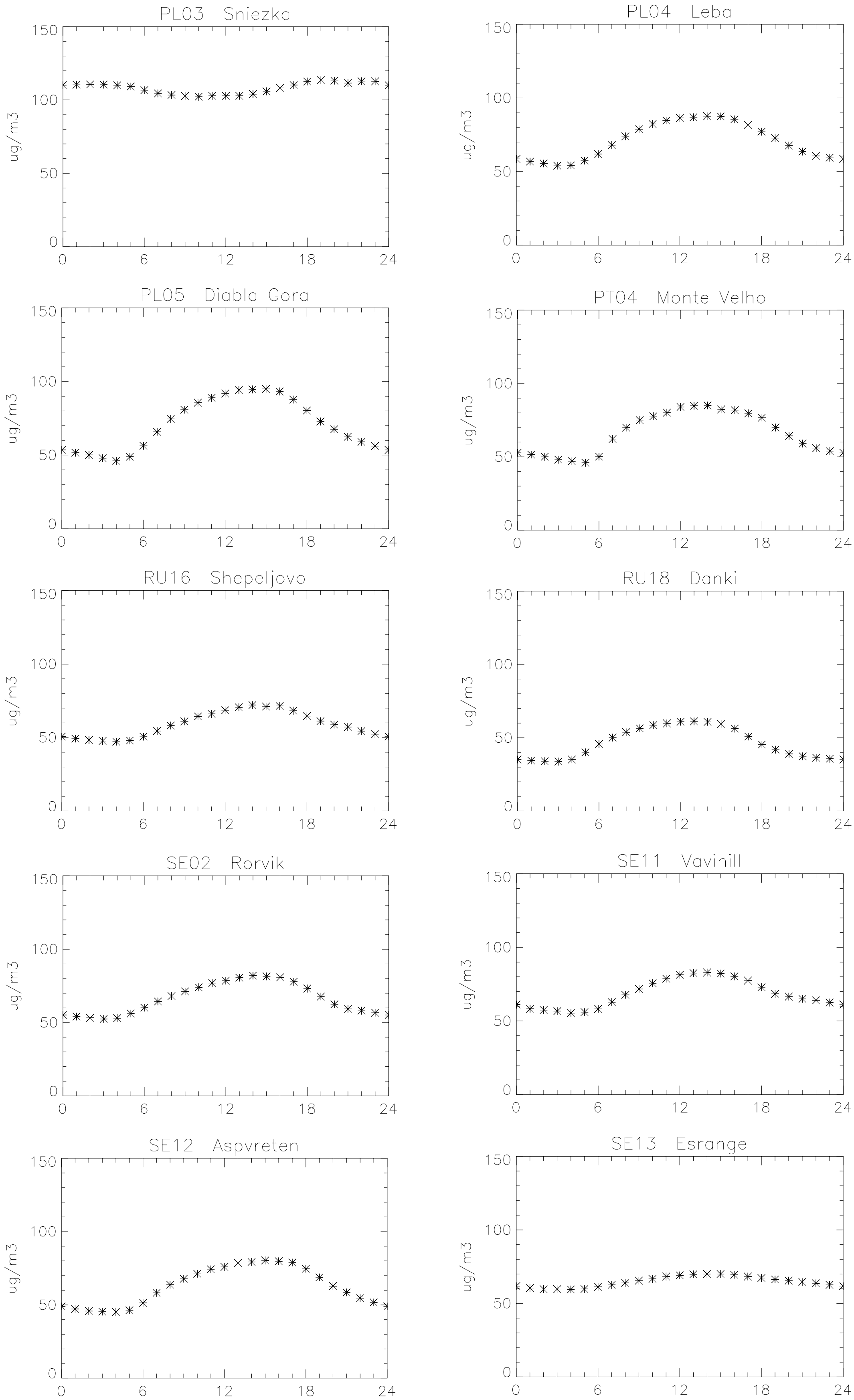

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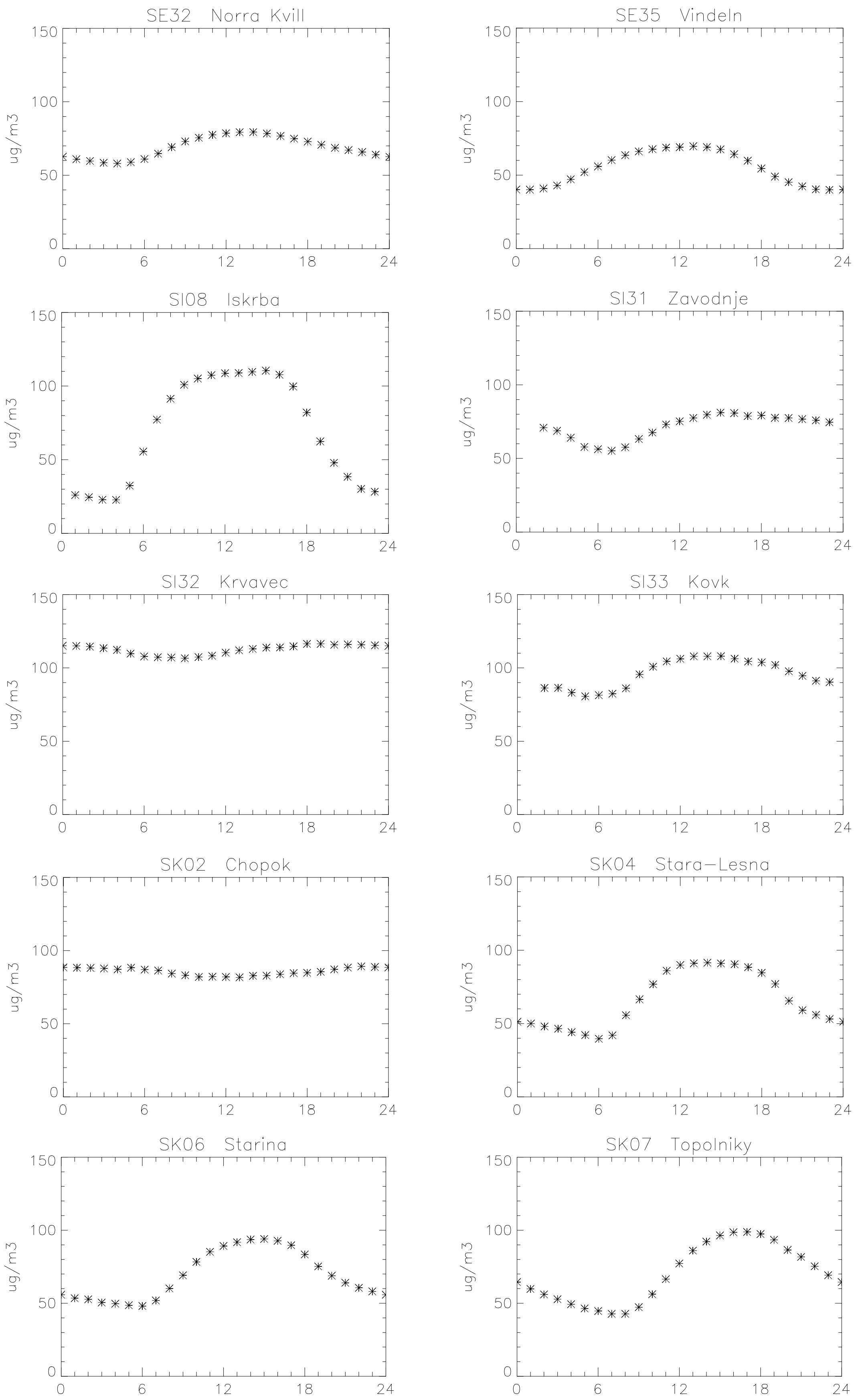

Figure 4.1, cont.