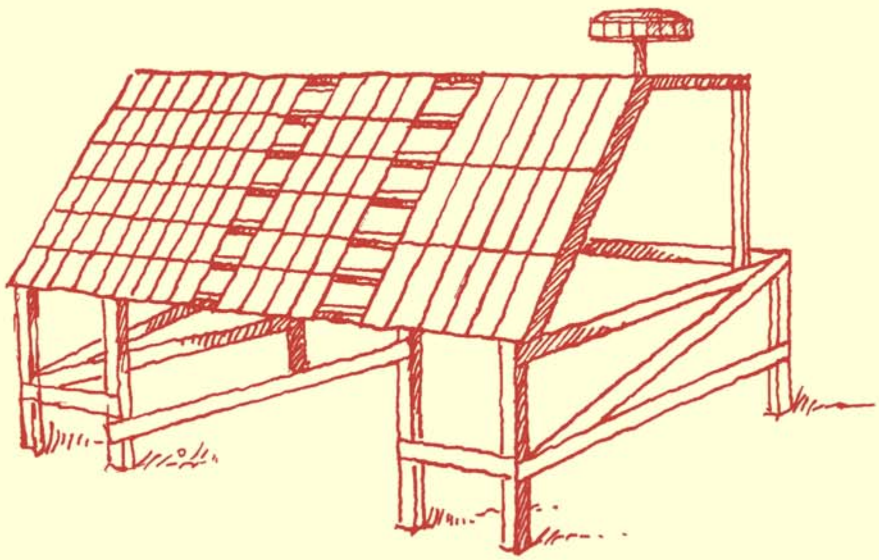
CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

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



Report No 67:

Environmental data report.
October 2008 to December 2009

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Norwegian Institute for Air Research
Kjeller / Norway

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

Trend exposure programme 2008 – 2009

Environmental data report October 2008 to December 2009

Terje Grøntoft[1], Kari Arnesen[1] and Martin Ferm[2]

1) Norwegian Institute for Air Research
2) IVL Swedish Environmental Research Institute Ltd.

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Summary

The UN/ECE international co-operative programme on effects on materials is an international project that was running for eight years at 39 test sites in 14 countries from 1987 to 1995. A second phase of the project started in 1997 with an adjusted number of test sites and countries participating. In the second phase 30 test sites and 19 countries participated. During the interim period 1995 to 1997 trend analysis for metal corrosion and exposure of the two materials glass and polymers continued. For the year 2002-2003 the ICP Materials programme was combined with the EU project MULTI-ASSESS that used the same field test sites. For the years 2005-2006 and 2008-2009 trend exposures with analysis of corrosion for the materials carbon steel, zinc and Portland limestone, and analysis of soiling of glass samples, were performed together with environmental parameter measurements and reporting. In 2005-2006 22 stations in 13 European countries plus Canada participated. In 2008-2009 24 stations in 14 European countries participated.

The Norwegian Institute for Air Research has been the sub-centre responsible for the environmental data storing, reporting and evaluation during the whole programme. This report includes the environmental data reported from the 2008-2009 trend exposures.

This report presents the environmental measurements for the UN/ECE ICP Materials trend exposure programme, 2008 - 2009. All data from the participating test sites are reported here. The exposures and environmental sampling at all except six stations started in October 2008. At Bottrop, Germany the exposure started in November 2008. At Lincoln, UK and at the four Italian stations the exposures started in December 2008. The exposures and environmental sampling was going on for one year. The yearly average values have been calculated from the month when the exposure was started. The monthly (and bi- and tri-monthly) values and yearly average values for the period are reported in two Appendixes, A and B, respectively. Appendix A gives the monthly data reported directly from the ICP Materials test sites and the bi- and tri-monthly values for HNO_3 and particle deposition measured with IVL passive samplers and analysed at IVL in Gothenburg, Sweden. Appendix B gives the yearly average values for the data reported directly from the ICP Materials test sites and for HNO_3 and particle deposition data measured with IVL passive samplers. Appendix C and D gives the original data from the IVL sampling. Appendix C gives the tri- and bi-monthly mean values for passive gas sampling and particle deposition on IVL samplers in a position sheltered from rain. Appendix D gives the yearly average values for HNO_3, SO_2, NO_2, O_3 sheltered from rain and for particle deposition, sheltered form rain and sheltered from rain and wind, for the exposure period. Appendix E gives the data availability in % for the sampling performed.

To obtain a good database for dose-response evaluation, it is important to have a wide range in the data for the most important parameters. The data obtained show that there is a good spread in the data for all important gases as well as for the most important meteorological parameters.

Trend exposure programme 2008 – 2009

Environmental data report
October 2008 to December 2009

1 Introduction

Airborne acidifying pollutants are known to be one major cause of corrosion of different materials including the extensive damage that has been observed on historic and cultural monuments. In order to fill some important gaps of knowledge in this field the Executive Body for the Convention on Long-range Transboundary Air Pollution decided to launch an International Co-operative Programme on Effects of Air Pollution on Materials, including Historic and Cultural Monuments, ICP Materials. The programme was launched in 1985 and measurements have been running since September 1987 and has involved exposure of materials at more than 30 test sites in Europe.

The aim of the programme has changed focus during the time past. In 1987 the focus was on the impact of SO_2 and climate. Later the programme was enlarged to perform a quantitative evaluation of the effect of NO_x and other pollutants like ozone and sulphur pollutants in combination with climatic parameters on the atmospheric corrosion of important materials. In 2002 an EU-project MULTI-ASSESS (EVK4-CT-2001-00044) was founded to extend the study. New parameters like HNO_3 and particulate matter were introduced and the study was expanded from corrosion to corrosion and soiling. In 2005 a new trend exposure programme was started, and exposures of main indicator materials were planned to take place every third year together with collection of environmental parameters. The environmental data from the trend exposures in 2005-2006 are reported in Grøntoft et al. (2007). The aim of the trend exposures is to follow the development of corrosion trends with time in Europe in the present quickly changing pollutant and climate situation.

The whole programme has been and is organised with Sweden as lead country and the Swedish Corrosion Institute (SCI), - from 2005 named “the Corrosion and Metals Research Institute” (KIMAB), serving as the Main Research Centre. Sub-centres in different countries have been appointed, each responsible for their own materials group. The materials groups are presently:

Structural metals:
- Steel and zinc for trend analyses (Sub-centre responsible for evaluation: SVUOM Praha a.s., Prague, Czech Republic),
- Zinc (EMPA Corrosion/Surface Protection, Dübendorf, Switzerland)

Stone materials, Portland limestone (Building Research Establishment Ltd., Department of Environment, Waterford, United Kingdom).

In addition The Univeristy Paris XII (LISA) is performing studies of **soiling of glass materials**.

The Norwegian Institute for Air Research has been the sub-centre for the environmental database through the whole programme.

Other sub centres for materials through the history of the exposure programs, but which are not presently operational are for:

Paint coatings, steel with silicon alkyd paint (Norwegian Institute for Air Research, Kjeller, Norway).

Glass materials, Two types of glass M1 and M3 (Institute of Chemistry, Academy of Fine Arts, Vienna, Austria)

In 2002 with the MULTI-ASSESS project there were also sub-centres for concrete and more stone materials, some of which are operational within the present trend exposure programme (see above).

Stone and concrete materials:
- Standard Portland concrete, Latvian limestone (Riga Technical University, Riga, Latvia).
- Portland limestone, Carrara marble, Calcareous Baumberger sandstone (Building Research Establishment Ltd., Department of Environment, Waterford, United Kingdom).
- Gotland sandstone (Swedish Corrosion Institute, Stockholm, Sweden).

Soiling materials:
- Synthetic polymeric materials (Middelsex University, GB)
- Modern Glass (LISA – Universite Paris XII, Paris, France)

Extended environmental analyses, HNO_3 and passive particle deposition measurement were introduced in the MULTI-ASSESS project (IVL Swedish Environmental Research, Gothenburg, Sweden), and are measured in the later trend exposure programme.

For the **trend exposure programme**, 2005 – 2006 and then in 2008 – 2009, a selection of materials and exposure sites were made. Carbon steel, zinc and Portland limestone samples for corrosion and modern glass samples for soiling, were exposed. Simultaneously a range of environmental parameters were measured (Table 1 and Appendix A – B) including HNO_3 gas and particle deposition.

A complete list of participants and national contact centres participating in the 2008 – 2009 trend exposure programme is given in Appendix F.

2 The measuring programme

The measuring programme for the trend exposures is given in Table 1

Table 1: The environmental measurement programme for the ICP Materials trend exposures 2008 - 2009.

Components to be measured		
Mandatory	Gas Precipitation Particulates Climate	SO_2, O_3, NO_2, HNO_3(IVL) mm, pH, SO_4-S, NO_3-N, Cl^- Particle deposition (IVL) Temperature, relative humidity
Optional	Precipitation Particulates	Conductivity, NH_4-N, Na^+, Ca^{2+}, Mg^{2+}, K^+, PM_{10}

The data are reported to the environmental sub-centre as monthly mean values, except for mm precipitation, which is reported as the monthly sum. Tri- or bi-monthly mean values are reported for HNO_3 and Tri- or bi-monthly sums for the particle deposition data collected on IVL passive samplers for all sites.

The data are presented as monthly and yearly values for the project period.

The quality control of the reported data is the responsibility of the countries and partners that report the data. The environmental sub-centre will control the data reported for outliers and create the joint database. It will perform an evaluation of the data files and look for trends in the data set.

3 Data from the monitoring test sites

The data are sent to the environmental sub-centre as Excel data files by e-mail.

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

4 Monthly mean concentrations

The average monthly data reported for the trend exposure in the period October 2008 to December 2009 for the test sites are given in Appendix A. The calculated average yearly data are given in Appendix B. The bi- or tri- monthly values for particles and HNO_3 are given with the monthly values in Appendix A. The calculated average yearly data for particles and HNO_3 are given in Appendix B. The complete IVL data are given in Appendix C and D. The participating countries are reporting data on a monthly basis and are responsible for the quality control of their own data. The particle deposition and HNO_3 are analysed and reported from IVL, Sweden.

5 Calculation of monthly values

For their own test sites the participants shall calculate the mean values in accordance with the following equations.

- Mean temperature (T_M)

  T_i = measured values

$$T_M = \frac{\sum_1^i T_i}{i}$$

i = *number of records* (1)

- Mean relative humidity (RH_M)

$$RH_M = \frac{\sum_1^i RH_i}{i} \quad (2)$$

- Mean gas concentrations G_M

$$G_M = \frac{\sum_1^i G_i}{i} \quad (3)$$

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

$$G_M = \sum_1^i \frac{(n_i \cdot G_i)}{\sum_1^i n_i} \quad (4)$$

n_i = *sampling period*

- Precipitation

$$mm = \sum_1^i mm_i \quad (5)$$

- Weighted mean pH (pH_M)

$$pH_M = \div \log \frac{\sum_1^i \left[mm_i \cdot \left(10^{-pH_i} \right) \right]}{\sum_1^i mm_i} \quad (6)$$

- Weighted mean values for cations, anions and conductivity (C_M)

$$C_M = \frac{\sum_1^i \left(mm_i \cdot C_i \right)}{\sum_1^i mm_i} \quad (7)$$

6 Results

Environmental data for the ICP Materials programme has been collected since September 1987. For the first phase 1987 to 1995, data from 39 sites were collected and reported (Henriksen et al., 1997). For second exposure phase, the period 1995 to 2001, the programme was redefined and the number of sites with reporting data was 31 (Henriksen and Arnesen, 2003, Henriksen and Arnesen, 2000). Exposures continued on these sites in the MULTI ASSESS project until 2003 (Henriksen et al. 2004). For the trend exposures taking place from 2008 a selection of exposure sites was made. The list of test sites over time for the UN/ECE ICP Materials project is given in Table 2 (SCI, 2005). The sites with a not yet finalised measuring period onwards from 1987 (no end year) were participating in the 2008 / 09 trend exposures.

Table 2: List of test sites of UN/ECE ICP Materials exposure programme.

Test site no.	Test site name	Country	Location	Measuring period
1	Prague	The Czech Republic	Urban	1987→
3	Kopisty	"	Industry	1987→
5	Ähtäri	"	Rural	1987→ 2003
7	Waldhof-Langenbrügge	Federal Republic of Germany	Rural	1987→ 2003
9	Langenfeld-Reusrath	"	Rural	1987→ 2003
10	Bottrop	"	Industry	1987→
13	Rome	Italy	Urban	1987→
14	Casaccia	"	Rural	1987→
15	Milan	"	Urban	1987→
16	Venice	"	Urban	1987→
21	Oslo	Norway	Urban	1987→
23	Birkenes	"	Rural	1987→
24	Stockholm South	Sweden	Urban	1987→
26	Aspvreten	"	Rural	1987→
27	Lincoln Cathedral	United Kingdom	Urban	1987→ 2003, 2008→
31	Madrid	Spain	Urban	1987→
33	Toledo	"	Rural	1987→
34	Moscow	Russia	Urban	1987→ 2003
35	Lahemaa	Estonia	Rural	1987→
36	Lisbon-Jeronimo Monastery	Portugal	Urban	1987→ 2003
37	Dorset	Canada	Rural	1987→ 2006
40	Paris	France	Urban	1997→
41	Berlin	Germany	Urban	1997→
43	Tel Aviv	Israel	Urban	1997→ 2001
44	Svanvik	Norway	Rural, industry	1997→
45	Chaumont	Switzerland	Rural	1997→
46	London	United Kingdom	Urban	1997→ 2003
47	Los Angeles	USA (CA)	Urban	1997→ 2003
49	Antwerp	Belgium	Urban	1997→ 2003
50	Katowice	Poland	Urban, industry	1999→
51	Athens	Greece	Urban,	2005→
52	Riga	Latvia	Urban,	2005→
53	Vienna¨	Austria	Urban,	2008→
54	Sofia	Bulgaria	Urban,	2008→

7 Regularity and quality of the reported data

The test sites represent areas from background level of pollutants to urban and industry levels. The background sites have historically had the best regularity for the data reported. Many of these sites belong to the EMEP monitoring programme and have long and good data records.

In urban and industrial areas it is generally more difficult to maintain sites. In programmes like ICP Materials with long exposure periods, it is sometime necessary to move a test site due to local problems like new use of the property. In some countries the funding of the environmental measurements was limited in periods. This is reflected in the selection of measurement stations for the trend exposures.

A brief review of the quality of the reported data for the different test sites are given in the following pages.

7.1 Review of reported data in the trend exposure programme, 2008 – 2009.

Optional data

The reporting of data for kations in precipitation and for particle concentration, PM_{10}, were optional in the programme. Full sets of monthly data for kations in precipitation are reported for sites 10, 21, 23, 31(except July 2009), 33(except July 2009), 35, 40, 41, 44, 45 and 52 (with some qualification). Full sets of monthly PM_{10}data are reported for sites 1 (except January 2009), 3 (except January 2009), 10, 23, 31, 33, 35, 40, 41, 45, 50, 51, 52, 53 and 54.

The non-optional IVL data (HNO_3 and deposition of particulate matter), excepting some months for some sites (below), are reported from all sites, except from site 54, that do not report IVL data. Particle deposition is not reported in January for site 1, in August and October for Site 3, in March for site 16, in October for site 23, in July and September for site 27 and in December (2008) and October for sites 40 and 44. HNO_3 is not reported in October for site 23. The IVL tri- and bi-monthly and yearly average data are reported with the all other data in Appendix A and B. This includes also data from IVL samplers for SO_2, NO_2, O_3, for the sites where these have been used.

For the "ordinary", non-optional local climate and gas data and IVL gas data (except HNO_3) a review of the reporting from the single countries and stations is given below.

Site 1 and 3 Czech Republic

Sites 1 and 3 have almost complete sets of data. Only O_3 data is missing for January 2009 for station no. 1

Site 10 and 41 Germany

Site 10 Bottrop has a complete data set for the period. For Site 41, Berlin, H+ data are missing for the whole period.

Site 13, 14, 15 and 16 Italy

All the data are available for the Italian stations except that Site 13, Rome, lack the SO_2, NO_2 and O_3 data for November 2008 and Site 14, Cassaccia, lack the O_3 value for December 2008.

Site 21, 23 and 44 Norway

The Norwegian stations have all the data, except SO_2 for October 2008 for Station 21, Oslo.

Site 24 and 26 Sweden

For the Swedish stations all the data are available except H+ and the anions for October 2008, and H+ for September 2009, for station 24, Stockholm.

Site 27 United Kingdom

The UK site at Lincoln report data for temperature and the gas pollution data from using IVL samplers. For temperature the three months of data for 2008 (October to December) are missing, and for the gases the data for October 2008 are missing as the IVL sampling started on the 29th October 2008. All the precipitation data are missing for Lincoln.

Site 31 and 33 Spain

All the date for the Spanish sites are available except for H+ and the anions for July 2009 for Site 31, Madrid, and the anions for July 2009 for Site 33 Toledo.

Site 35 Estonia

All the data are available for Site 35, Lahemaa.

Site 40 France

All the data are available for Site 40, Paris.

Site 45 Switzerland

All the data are available for Site 45, Chaumont.

Site 50 Poland

All the data, except H+ and the anions (for the whole period), are available for Site 50, Katowice.

Site 51 Greece

All the data, except H+ and the anions (for the whole period), are available for Site 51, Athens.

Site 52 Latvia

Site 52 Riga reports all the data. The values for the anions from April to June 2009, are reported as "doubtful" due to discrepancy discovered in ion balance calculation.

Site 53 Austria

All the data, except H+ and the anions (for the whole period), are available for site 53 Vienna.

Site 54 Bulgaria

All the data are available for Site 54, Sofia, except Cl^- in precipitation (for the whole period).

8 Data for regression analyses

8.1 The data base

For regression analyses the database for material damage for one year has to be correlated with the environmental database for the same period (Appendix B).

8.2 The data distribution

It is important for the evaluation of the dose-response correlation for the environmental impact on the materials that there is as large spread as possible in the concentrations of the most important pollution parameters. In the following figures the ranked distribution of the yearly mean values for the climate and pollution parameters, for the exposure year 2008-2009, are given. The diamonds represent values for measurements with the local station equipment, where as the squares represent values from measurements with IVL passive samplers.

In Figure 1 the spread in the SO_2 concentrations for the year (2008 - 2009) is shown. The numbering of the sites is in accordance with Table 2.

The values go from 15.3 in Katowice µg/m^3 down to 0.0 µg/m^3 for Casaccia. The distribution is fairly good. The value for Katowice (which was also the highest for the period 2005 - 2006 is however only about 40 % of the value in 2005 – 2006. In total the distribution (values) are slightly lower than for the period 2005 – 2006. Low values are dominating, as expected, since the total amount of sulphur emission in Europe has been reduced during the years.

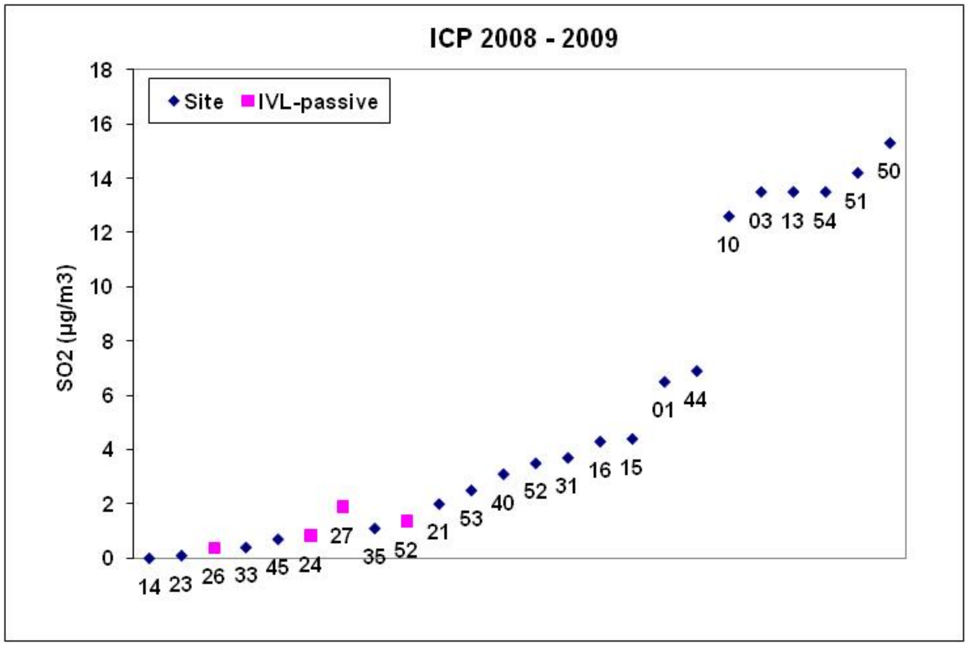

Figure 1: The spread in the yearly mean SO_2 concentrations at the test sites for the test period in ICP Materials.

In Figure 2 the spread in the NO_2 concentrations for the test period year is shown.

The values go from 57.1 µg/m^3 for Sofia down to 1.2 µg/m^3 at Svanvik. The distribution is fairly good and quite similar to that from 2005-2006, but with the highest values about 10 µg/m^3 lower than in 2005-2006. Many of the low values represent EMEP rural background sites included in the programme.

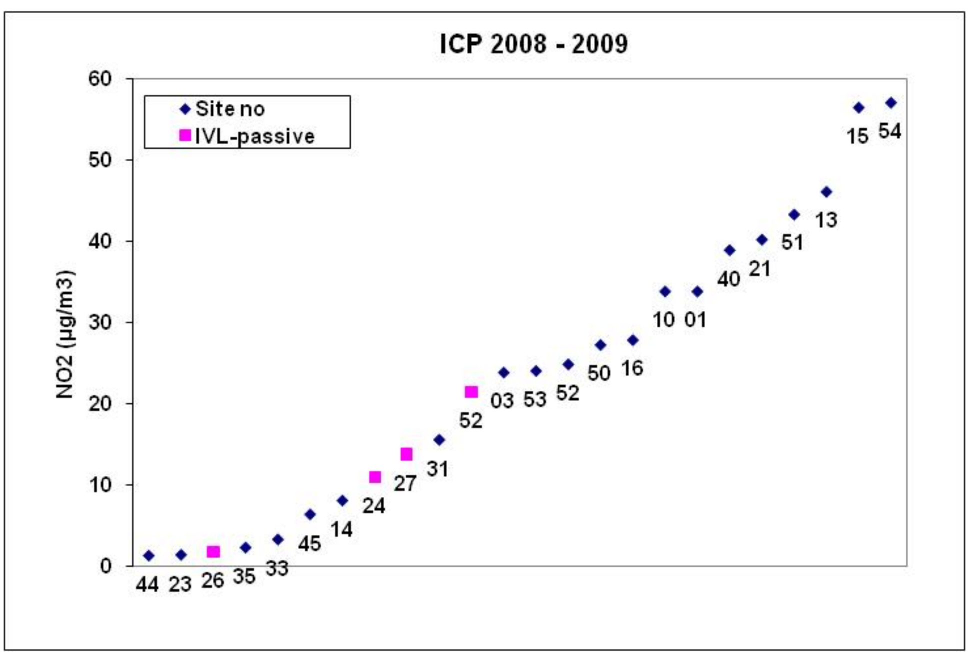

Figure 2: The spread in the yearly mean NO_2 concentrations at the test sites for the test period in ICP Materials.

In Figure 3 the spread in the O_3 concentrations for the test period is shown.

The values go from 82 µg/m^3 for the EMEP station outside Toledo down to 24 µg/m^3 for Athens. The Athens station is an urban traffic station where consumption of O_3 due to NO emission are expected.

The distribution is even up to about 55 µg/m^3 with two stations considerably higher, as for the 2005 - 2006 period. The low values are observed in the big cities and highest values in rural areas in the south and up in the alpine area.

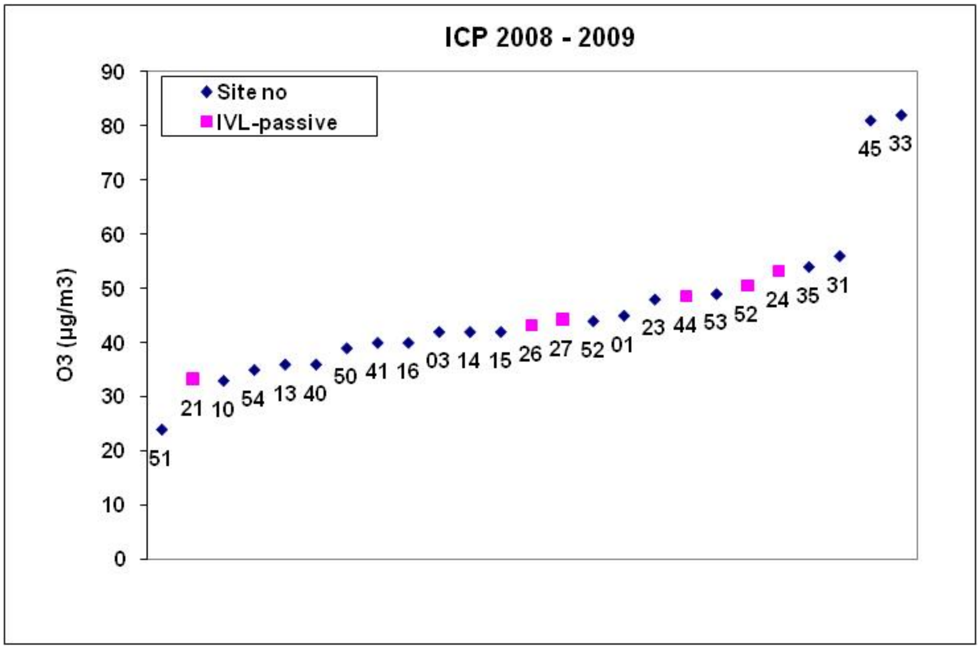

Figure 3: The spread in the yearly means O_3 concentrations at the test sites for the test period in ICP Materials.

In Figure 4 the spread for HNO_3 concentrations in the test period is shown. The figure show yearly average values from tri- (station 31 and 33) bi-monthly sampling in a position sheltered from rain. The values go from 1.62 µg cm^{-3} at Milan down to 0.08 at Aspvreten. The spread is good and similar to the 2005 - 2006 period, but with a few higher values.

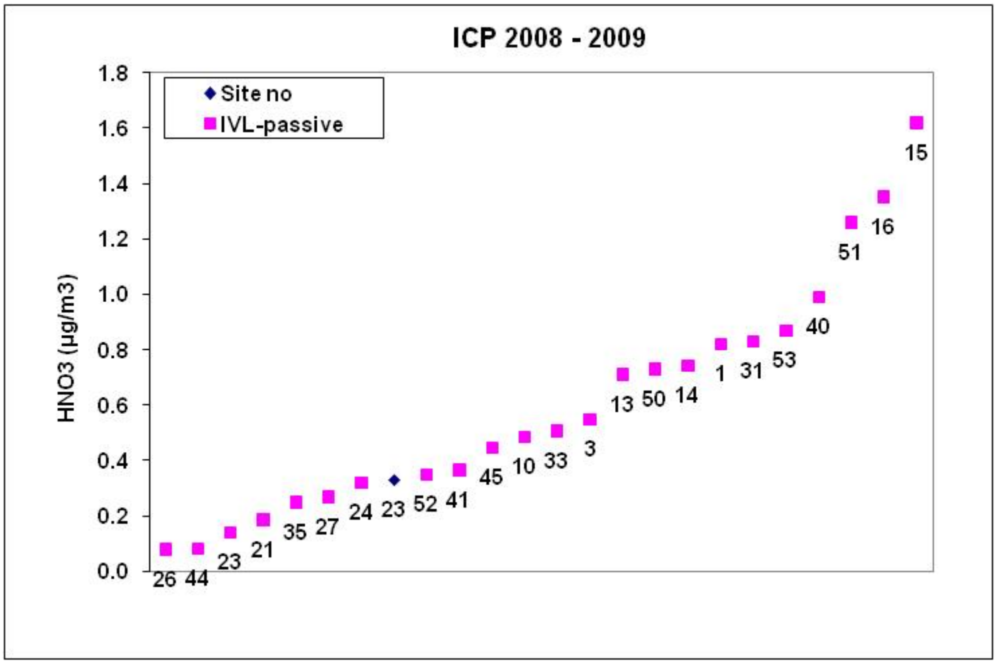

Figure 4: The spread in the yearly mean HNO_3 values for the test sites for the test period for ICP Materials.

In Figure 5 the spread for pH in the test period is shown. The pH values go from 6.45 for the Madrid station down to 4.47 at Svanvik. The high values are observed in cities in southern and central Europe the low values at northern or high altitude background stations. The spread is good and similar to the 2005 - 2006 period.

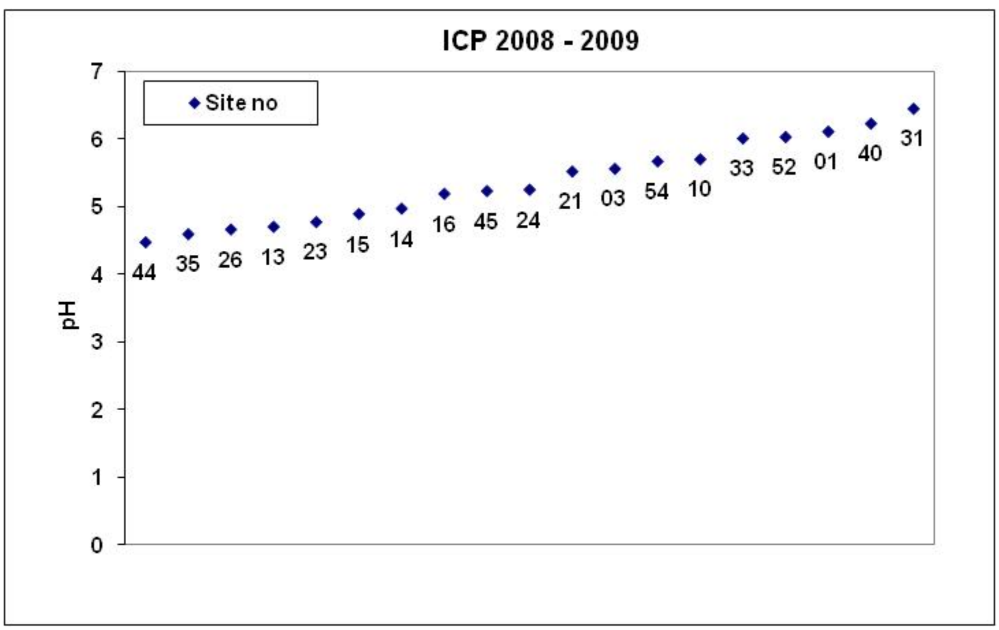

Figure 5: The spread in the yearly means pH values at the test sites for the test period in ICP Materials.

In Figure 6 the spread for temperature in the test period is shown. The yearly average temperature goes from 18.7˚C in Athens down to 0.4˚C for the Svanvik station. The temperature database covers the spread expected to be found over most of Europe.

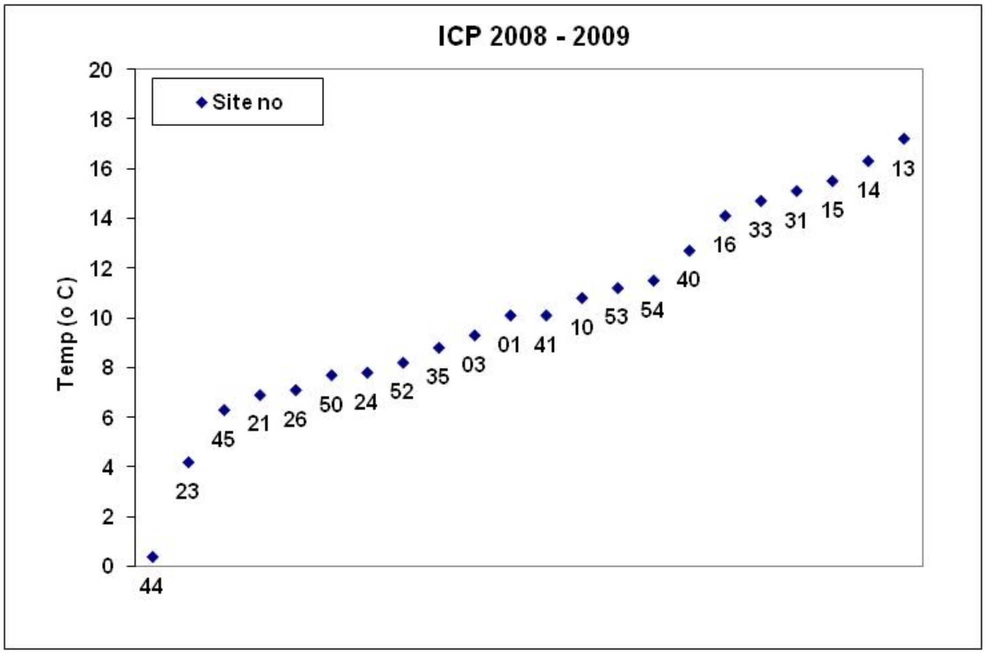

Figure 6: The spread in the yearly mean temperature at the test sites for the test period for ICP Materials.

In Figure 7 the spread for relative humidity in the test period is shown. The yearly average RH go from 84 in Katowice down to 53 for the Madrid station. The spread is quite good and the RH database covers the spread expected to be found over Europe.

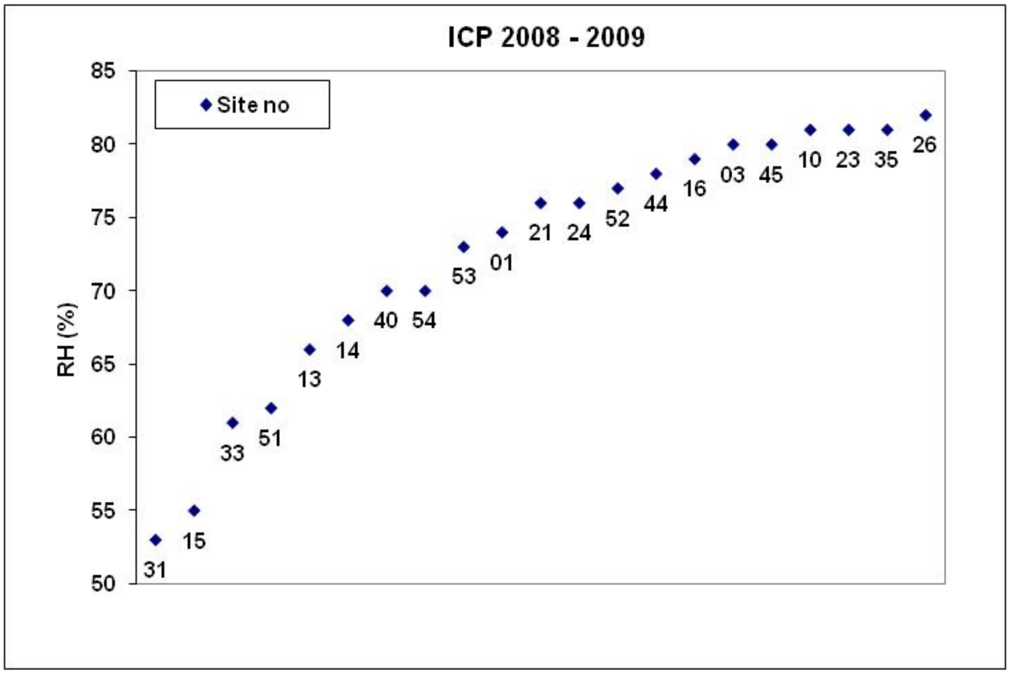

Figure 7: The spread in the yearly mean relative humidity at the test sites for the test period for ICP Materials.

In Figure 8 the spread for mm precipitation in the test period is shown. The spread is from 1392.5 mm at Birkenes down to 267 mm in Madrid. The spread is good but with one station, Birkenes, considerably higher than the next rainiest station, Chaumont with 949.7 mm. It is expected that stations on the European west coast can have considerably higher average yearly precipitation amount, and this area is not well represented.

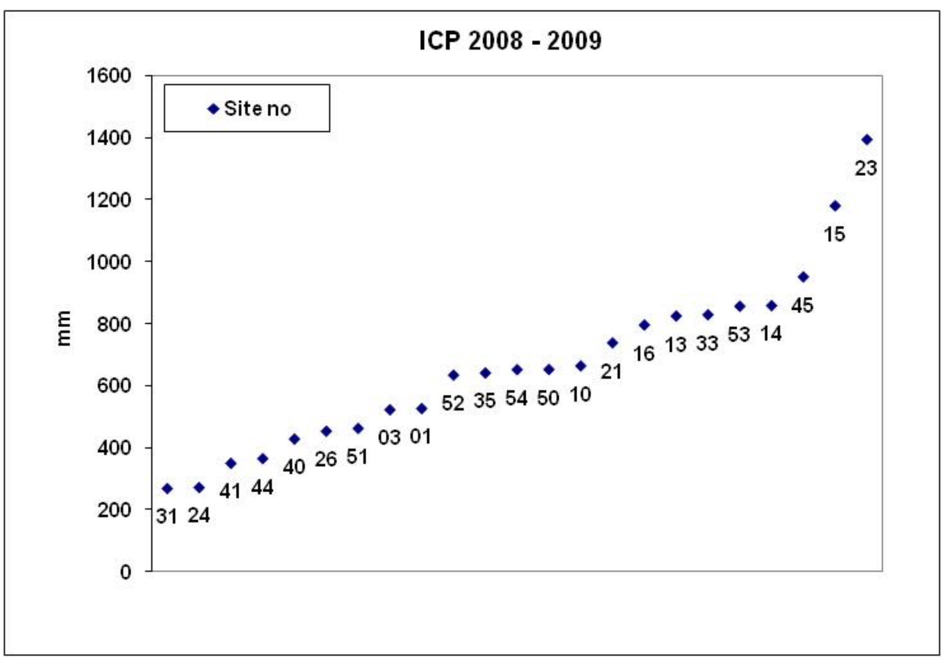

Figure 8: The spread in the yearly sum of precipitation at the test sites for the test period for ICP Materials.

Figure 9 and Figure 10 give the results from the measurements using the IVL passive samplers for particle deposition.

In Figure 9 the spread for particle deposition in the test period is shown. The figure show yearly average values from tri- (station 1 and 3) and bi-monthly sampling in a position sheltered from rain, and from yearly sampling in a position sheltered from both rain and wind. The rain sheltered particle deposition values go from 94.2 µg cm^{-2} $month^{-1}$ in Athens down to 4.45 µg cm^{-2} $month^{-1}$ at the EMEP site Aspvreten in Sweden. The spread is good and quite similar to the 2005 - 2006 period, but with the Athens site much higher than any other site. The value for Athens in 2008 - 2009 was considerably lower than for 2005 - 2006 (145.9 µg cm^{-2}). The values for both rain sheltered and wind sheltered samples are low, in the range 0.5 to 9.6 µg cm^{-2}.

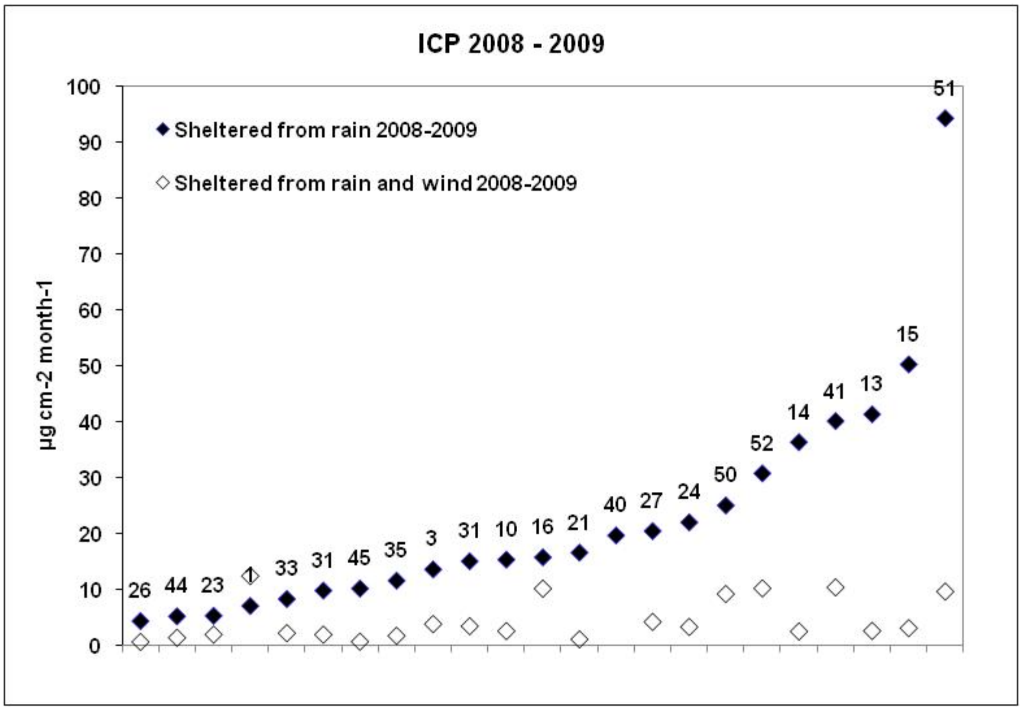

Figure 9: The spread in the yearly mean particle deposition at the test sites for the test period for ICP Materials.

Figure 10 shows the reflectance values ln (R_0/R) where R_0 is the reflectance before exposure and R the reflectance after exposure for the soiled surfaces of the used IVL passive teflon samplers, corresponding to the values for the particle deposition on the samplers in Figure 9. The relative reflectance for the rain sheltered samples values go to 0.07 for the traffic station in Berlin down to 0 for the sites of Svanvik, Birkenes and Toledo. The three highest stations are the same as for the 2005 - 2006 period, but the 2008 - 2009 values are about 50 % of the values in 2005 - 2006, when they were much higher than the other stations. The relative reflectance for the rain and wind sheltered samples values go from 0 for ≈ 70 % of the samples up to 0.08 for Riga.

The spread is good for the samples sheltered from rain, but less good with many zero values for the samples sheltered from both rain and wind. Generally, the sites showing much loss of reflectance are cities where black soot from traffic pollution is expected.

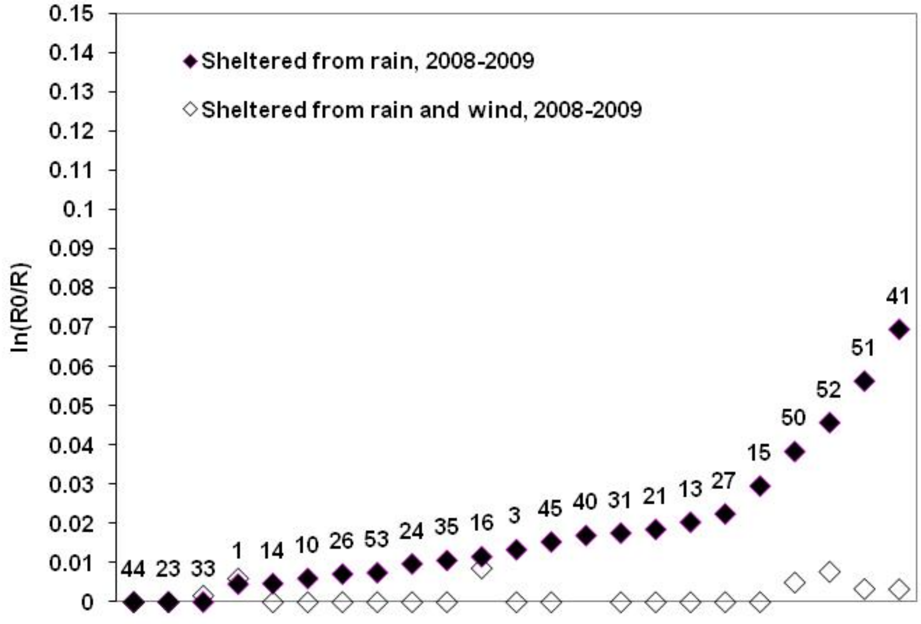

Figure 10: The spread in the yearly mean relative reflectance of the soiled sample surfaces given as ln (R_0/R) at the test sites for the test period for ICP Materials.

9 Conclusions

The database obtained during the trend exposure period 2008 - 2009 has comparable regularity and quality as for the previous years of the ICP Materials programme. Sites belonging to the national surveillance programme and EMEP have the best regularity. Some of the urban sites have a lower regularity.

The irregularity is highest for the precipitation measurements. Precipitation quality is often not measured in cities and background sites in surveillance programmes has normally a slow quality assurance procedure. Reductions in the surveillance programmes in different countries is still a part of the problem.

The spread in the data for the different environmental parameters is sufficient for statistical dose response analyses. However, some data for important parameters are missing for some sites. The number of sites included in the statistical treatment may therefore change depending of the selection of parameters for the analyses.

10 References

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Appendix A

Monthly values for the test sites for the exposure period

Table A.1: Mandatory data including measurement with IVL samplers. The time for mounting and demounting of the IVL samplers are noted.

	Sampling period		Mandatory																	
			Climate		Gases								Precipitation					Particle deposition		
			Temp	RH	SO_2	IVL-passive SO_2 (Tri- or bi-monthly value put in for last month)	NO_2	IVL-passive NO_2 (Tri- or bi-monthly value put in for last month)	O_3	IVL-passive O_3 (Tri- or bi-monthly value put in for last month)	HNO_3	IVL-passive HNO_3 (Tri- or bi-monthly value put in for last month)	Amount	H^+	SO_4^{2-}	NO_3^-	Cl^-	IVL passive sampler Particle depositon (Tri- or bi-monthly value put in for last month)		
Site no	Year	Month	C degrees	%	µg/m³	µg/m³	µg/m²	µg/m²	µg/m³	µg/m³	µg/m³	µg/m³	mm	pH	mgS/l	mgN/l	mgCl/l	µg/cm² month	Date for mounting of IVL passive samplers	Date for demounting of IVL passive samplers
01	2008	10	9.6	82	3.5		42.3		21				43.5	6.9	4.3	11.50	0.3			
01	2008	11	5.1	85	5.0		36.6		19				23.1	6.5	1.2	8.30	0.4			
01	2008	12	1.9	82	9.9		31.7		23				33.2	8.20	3.30	11.10	1.10			
01	2009	1	-3.0	88	9.3		48.2						17.0	6.30	6.40	12.20	5.60			
01	2009	2	0.5	83	8.9		42.1		34			0.35	24.8	6.30	6.40	11.10	5.60	7.0	23.10.2008 12:00	12.02.2009 12:00
01	2009	3	4.9	76	8.2		34.8		53				65.4	6.70	2.10	11.10	1.50			
01	2009	4	13.8	60	4.2		24.3		78				22.3	7.10	1.70	6.60	1.20			
01	2009	5	15.1	66	3.3		25.7		71			0.80	98.1	7.10	1.70	6.60	1.20	5.9	12.02.2009 12:00	12.05.2009 12:00
01	2009	6	16.4	69	5.2		30.6		63				80.2	5.40	0.40	8.60	0.10			
01	2009	7	19.6	68	3.8		27.6		28				77.6	6.40	2.30	10.30	0.40			
01	2009	8	20.5	60	12.0		26.4		26			1.29	22.2	6.90	3.90	4.60	1.60	8.7	12.05.2009 12:00	04.08.2009 12:00
01	2009	9	16.6	68	5.0		34.8		82				17.6	6.90	3.90	4.60	1.60			
01	2009	10	8.7	78	9.0		43.9		57			1.02	40.4	7.1	2.1	7.50	0.7		04.08.2009 12:00	20.10.2009 12:00

03	2008	10	7.7	88	8.2		27.2		20				56.7	5.9	8.1	11.00	0.7			
03	2008	11	4.1	88	10.2		31.8		20				21.4	6	15.6	12.50	0.5			
03	2008	12	0.9	87	9.8		34.5		17				26.1	5.60	9.60	11.50	0.50			
03	2009	1	-3.5	87	30.3		26.3		20				6.9	6.10	23.10	19.00	2.00			
03	2009	2	0.3	82	14.2		24.5		38			0.32	24.0	5.00	2.10	11.10	0.50	11.8	24.10.2008 12:00	18.02.2009 12:00
03	2009	3	4.6	80	13.1		21.7		54				34.6	4.70	4.50	10.30	1.10			
03	2009	4	13.3	67	13.7		21.1		58				27.4	5.30	8.60	11.90	0.50			
03	2009	5	14.3	73	17.8		22.0		65			0.65	90.3	6.50	4.00	9.70	0.20	16.6	18.02.2009 12:00	06.05.2009 12:00
03	2009	6	16.2	75	14.4		16.9		62				67.7	6.00	5.70	7.00	0.20			
03	2009	7	18.9	77	8.5		16.9		38				62.5	5.80	2.60	7.90	0.50			
03	2009	8	19.5	72	10.8		15.5		38			0.62	93.1	6.80	3.40	7.30	0.50		06.05.2009 12:00	06.08.2009 12:00
03	2009	9	15.6	79	11.4		26.9		80				10.5	6.90	16.50	21.70	1.20			
03	2009	10	8.4	84	18.3		31.1		52			0.71	38.9	6.80	2.10	14.50	0.10		06.08.2009 12:00	20.10.2009 12:00
10	2008	10	10.4	88	25.0		38.0		14				23.5	5.80	1.79	0.55	1.20			
10	2008	11	7.0	90	19.0		37.0		15				60.9	5.08	2.20	0.85	2.68			
10	2008	12	2.7	91	15.0		41.0		10			0.23	40.5	5.60	1.61	0.50	1.40	23.4	07.10.2008 20:00	01.12.2008 07:00
10	2009	1	0.4	86	17.0		49.0		14				45.3	5.22	1.95	0.60	2.88			
10	2009	2	3.5	89	10.0		37.0		23			0.17	58.9	6.28	1.20	0.70	1.10	11.0	01.12.2008 07:00	10.02.2009 19:00
10	2009	3	6.5	81	16.0		35.0		40			0.20	98.4	6.30	1.90	1.20	1.80	13.6	10.02.2009 19:00	31.03.2009 06:30
10	2009	4	13.6	73	11.0		36.0		52				24.1	6.44	1.60	1.25	0.26			
10	2009	5	15.2	70	8.0		27.0		55				26.4	6.70	2.40	0.60	0.90			
10	2009	6	16.5	74	7.0		21.0		58			0.76	91.5	6.00	0.60	0.40	0.50	20.9	31.03.2009 06:30	01.06.2009 14:30
10	2009	7	19.2	75	14.0		23.0		46			0.89	143.5	5.90	0.80	0.50	0.50	9.5	01.06.2009 14:30	31.07.2009 09:00
10	2009	8	19.4	73	5.0		31.0		45				20.7	6.40	1.20	0.90	0.40			
10	2009	9	15.6	81	4.0		30.0		29				29.0	6.10	0.50	0.40	0.80			
10	2009	10	10.2	85	7.0		32.0		19			0.63	101.3	6.00	1.20	0.40	4.20	15.1	31.07.2009 09:00	07.10.2009 17:30

13	2008	10	18.0	75	11		45.7		24				128.0	5.2	1.2	2.3	1.1			
13	2008	11	13.0	78									141.0	5	1.25	0.65	1.62			
13	2008	12	9.0	80	10		52.0		11			0.13	230.0	4.9	2.5	3.2	7.5	50.3	29.10.2008 12:00	24.12.2008 10:00
13	2009	1	8.0	81	25		49.8		12				110.0	4.1	3.2	0.6	3.1			
13	2009	2	8.0	66	21		46.0		26			0.32	45.0	5.6	1.2	1.2	5.6	42.1	24.12.2008 10:00	03.02.2009 12:05
13	2009	3	12.0	65	23		46.6		39				43.4	6.1	0.75	0.6				
13	2009	4	15.0	68	18		42.8		43			0.21	53.4	5.7	0.85	0.65	1.8	60.2	03.02.2009 12:10	28.04.2009 10:00
13	2009	5	20.6	56	9		46.8		46				15.4	5.2	0.9	1.62	1.9			
13	2009	6	22.6	61	8		38.0		53			0.97	39.5	5	0.95	1.55	1.2	14.1	28.04.2009 10:00	26.06.2009 10:30
13	2009	7	25.8	57	7		45.1		50				20.7	4.9	1.2	2.15	6.5			
13	2009	8	29.6	57	6		34.1		60			1.83	0.0	0	0	0	0	52.3	30.06.2009 09:30	27.08.2009 10:30
13	2009	9	22.4	64	9		50.4		37				53.7	4.8	0.58	0.65	3.8			
13	2009	10	16.3	67	12		55.3		24				71.3	4.7	0.7	0.72	3.2			
14	2008	10	17.0	77	0.0		2.0		17				77.0	5.8	0.9	0.65	1.02			
14	2008	11	12.0	78	0.0		2.0		5				140.0	5.82	0.93	0.38	1.51			
14	2008	12	8.0	80	0.0		2.0					0.27	220.0	5.09	2.3	2.28	8.2	12.9	17.10.2008 14:00	17.12.2008 18:30
14	2009	1	7.0	80	0.0		2.0		11				126.0	4.3	2.82	0.3	3.07			
14	2009	2	7.0	70	0.0		2.0		28			0.36	79.0	5.7	0.97	0.62	5.38	16.9	18.12.2008 10:00	24.02.2009 12:00
14	2009	3	11.0	69	0.0		2.0		52				56.0	6.4	0.58	0.29	1.9			
14	2009	4	14.0	73	0.0		2.0		53			0.38	67.0	6.03	0.52	0.32	1.38	129.9	24.02.2009 12:00	27.04.2009 10:15
14	2009	5	20.0	60	0.0		4.0		60				5.0	5.75	0.7	0.82	1.48			
14	2009	6	22.0	67	0.0		10.0		56			1.20	49.0	5.4	0.75	0.8	0.85	33.2	27.04.2009 10:15	30.06.2009 09:30
14	2009	7	25.0	58	0.0		24.0		53				1.0	5.8	0.8	1.07	6.2			
14	2009	8	27.0	57	0.0		25.0		57			1.78	0.0	0	0	0	0	13.2	30.06.2009 09:30	26.08.2009 11:00
14	2009	9	22.0	66	0.0		19.0		49				54.0	5.7	0.65	0.34	3.7			
14	2009	10	16.0	70	0.0		2.0		42				60.0	5.2	0.7	0.5	3.9			

15	2008	10	16.4	58	3.7		58.1		24				52.2	5.3	1.4	1.15	1.1			
15	2008	11	9.5	69	0.3		57.9		10				159.4	5.33	1.45	0.88	1.5			
15	2008	12	3.7	75	8.7		66.6		7			0.28	145.4	4.59	2.8	2.78	7.8	24.6	21.10.2008 12:00	17.12.2008 10:40
15	2009	1	2.3	72	12.1		89.6		6				69.8	4.02	3.32	0.8	3			
15	2009	2	6.4	52	4.5		66.9		16			0.32	90.8	5.2	1.47	1.12	5.3	15.1	17.12.2008 10:40	19.02.2009 14:15
15	2009	3	10.9	45	4.4		50.5		36				106.2	5.9	1.08	0.79	1.8			
15	2009	4	14.5	57	5.9		40.0		47			0.57	240.2	5.53	1.04	0.82	1.42	28.9	19.02.2009 14:15	21.04.2009 09:45
15	2009	5	21.1	38	3.2		42.3		74				4.4	5.25	1.2	1.32	1.51			
15	2009	6	22.9	44	1.1		35.9		83			2.52	58.6	4.9	1.25	1.3	0.8	43.0	21.04.2009 09:45	22.06.2009 14:40
15	2009	7	24.6	43	0.2		48.6		87				164.8	5.3	1.3	1.57	5.4			
15	2009	8	26.6	53	7.0		34.1		85			4.21	17.8	4.7	1.15	0.83	3.5	149.5	22.06.2009 14:40	21.08.2009 11:00
15	2009	9	22.2	60	3.4		65.8		49				58.8	5.35	1.2	0.8	3.2			
15	2009	10	14.8	65	2.2		79.6		18			1.80	62.8	5.2	1.32	0.95	2.9	43.5	21.08.2009 11:00	29.10.2009 10:30
16	2008	10	14.4	81	4.3		31.7		27				32.6	5.6	1.5	0.75	1.61			
16	2008	11	8.3	85	5.3		32.7		23				135.4	5.4	1.2	0.5	2.1			
16	2008	12	3.8	87	5.7		33.7		18			0.18	100.2	5.3	1.8	1.35	5.4	14.1	23.10.2008 10:00	23.12.2008 11:30
16	2009	1	2.6	82	5.7		41.3		13				57.6	4.7	2.9	0.42	3.8			
16	2009	2	4.7	78	6.7		31.0		21			0.26	40.4	5.6	1.35	0.65	6.5	10.1	23.12.2008 11:30	26.02.2009 11:30
16	2009	3	8.2	78	4.0		26.0		41				67.0	5.8	0.9	0.47	2.3			
16	2009	4	13.6	79	4.0		24.5		54			0.68	80.4	5.3	0.85	0.4	1.65		26.02.2009 11:30	22.04.2009 09:30
16	2009	5	19.0	75	3.3		21.0		59				13.0	5.1	0.93	0.9	1.82			
16	2009	6	20.3	92	2.7		41.0		63			2.03	107.0	5.6	1.1	0.85	1.23	14.9	22.04.2009 11:00	26.06.2009 14:00
16	2009	7	23.1	72	2.7		18.3		58				13.2	4.8	1.22	0.64	6.11			
16	2009	8	24.0	73	4.3		14.7		58			3.83	32.2	5.2	1.03	0.68	3.82	13.9	26.06.2009 14:00	27.08.2009 15:50
16	2009	9	21.1	74	4.3		25.7		46				67.0	4.9	1.02	0.75	3.61			
16	2009	10	15.2	77	3.3		24.3		22			1.05	81.2	5.05	1.3	0.8	3.02	26.7	27.08.2009 15:50	27.10.2009 11:00

21	2008	10	7.1	81			29.7						31.22	6.97	0.56	0.23	3.29			
21	2008	11	1.9	81	1.8		30.7						62.33	5.67	0.37	0.28	2.19			
21	2008	12	-1.4	89	2.2		36.1			18.5		0.04	15.0	4.94	1.23	0.87	7.27	18.7	07.10.2008 13:00	02.12.2008 13:00
21	2009	1	-2.4	86	2.3		68.7						55.4	5.31	0.47	0.56	8.35			
21	2009	2	-5.3	88	3.1		107.3			16.8		0.17	72.1	5.37	0.34	0.35	2.49	12.0	02.12.2008 13:00	02.02.2009 13:00
21	2009	3	1.2	77	2.4		52.5						30.8	5.46	0.72	0.53	3.01			
21	2009	4	8.0	72	1.7		16.4			28.5		0.22	45.1	6.41	0.64	0.96	0.84	17.7	02.02.2009 13:00	01.04.2009 13:45
21	2009	5	12.1	61	1.5		24.7						71.2	6.08	0.6	1.00	0.72			
21	2009	6	15.9	55	1.4		40.4			53.4		0.31	42.7	5.79	0.19	0.17	0.43	27.3	01.04.2009 13:45	02.06.2009 14:00
21	2009	7	17.1	76	2.1		18.5						138.8	5.59	0.28	0.24	1.04			
21	2009	8	16.1	78	2.2		20.6			51.8		0.21	146.3	5.33	0.96	0.35	0.74	18.3	02.06.2009 14:00	03.08.2009 14:00
21	2009	9	13.0	74	1.8		37.3						26.1	5.75	0.24	0.00	1.73			
21	2009	10	4.0	81						29.2		0.16						6.5	03.08.2009 14:00	05.10.2009 13:00
23	2008	10	6.1	87	0.1		1.1		45		0.09		217.8	5.03	0.31	0.21	3.59			
23	2008	11	1.8	83	0.1		1.3		44		0.05		123.9	4.79	0.48	0.33	5.03			
23	2008	12	-1.7	91	0.1		1.3		36		0.18	0.03	86.4	4.51	0.68	0.45	3.25	7.0	08.10.2008 13:00	01.12.2008 07:00
23	2009	1	-1.6	90	0.1		3.0		46		0.45		201.0	4.58	0.45	0.59	2.35			
23	2009	2	-6.0	88	0.1		1.7		52		0.27	0.10	56.6	4.5	0.29	0.46	0.45	3.8	01.12.2008 07:00	01.02.2009 07:00
23	2009	3	-0.9	82	0.1		1.6		66		0.23		119.8	4.58	0.64	0.67	1.13			
23	2009	4	4.3	78	0.2		1.2		61		0.63	0.21	36.9	6.12	0.79	1.20	0.68	3.2	01.02.2009 07:00	01.04.2009 06:00
23	2009	5	7.5	70	0.1		1.0		65		0.63		62.0	5.08	0.38	0.42	1.14			
23	2009	6	11.0	68	0.1		1.0		51		0.23	0.22	51.6	4.96	0.21	0.28	0.62	6.8	01.04.2009 06:00	01.06.2009 06:00
23	2009	7	13.0	78	0.1		1.0		41		0.45		241.7	4.84	0.33	0.33	0.89			
23	2009	8	11.2	80	0.2		1.2		39		0.45	0.13	111.3	4.97	0.40	0.47	1.73	6.4	01.06.2009 06:00	01.08.2009 16:00
23	2009	9	6.3	82	0.0		0.4		36		0.27		83.5	5.09	0.23	0.33	0.95			
23	2009	10	-0.5	86	0.0		0.3		31		0.09		220.9	4.83	0.29	0.21	0.93		01.08.2009 16:00	06.10.2009

24	2008	10	8.4	83									43.4	N.A.	N.A.	N.A.	N.A.			
24	2008	11	3.2	86									29.0	5.02	0.33	0.35	0.67			
24	2008	12	1.4	89		0.54		11.62		36.0		0.14	18.6	4.55	0.44	0.56	0.38	16.7	02.10.2008 11:00	05.12.2008 10:00
24	2009	1	-1.1	84									9.0	5.52	0.91	0.63	1.40			
24	2009	2	-1.8	83		1.40		15.33		35.4		0.39	5.2	4.51	0.64	0.80	0.93	25.6	05.12.2008 10:00	03.02.2009 10:30
24	2009	3	0.8	79									6.0	5.99	0.41	0.41	0.59			
24	2009	4	7.9	62		1.06		11.58		58.0		0.19	1.6	7.44	1.82	0.88	1.33	27.9	03.02.2009 10:30	08.04.2009 10:00
24	2009	5	11.7	61									11.8	6.09	0.44	0.30	0.88			
24	2009	6	14.2	63		0.82		8.77		76.4		0.35	20.4	5.64	0.15	0.12	0.14	23.5	08.04.2009 10:00	10.06.2009 10:30
24	2009	7	17.7	73									57.4	5.90	0.25	0.19	0.26			
24	2009	8	17.4	71		0.62		8.65		62.7		0.59	44.2	6.35	0.45	0.20	0.31	17.0	10.06.2009 10:30	12.08.2009 10:00
24	2009	9	13.9	74									23.8	N.A.	0.76	0.00	0.64			
24	2009	10	11.9			0.59		9.62		49.8		0.28						22.0	12.08.2009 10:00	14.10.2009 10:30
26	2008	10	7.5	89									48.0	4.80	0.23	0.25	1.09			
26	2008	11	2.6	90									50.0	4.70	0.29	0.35	0.63			
26	2008	12	1.0	93		0.37		2.34		32.6		0.07	53.0	4.40	0.45	0.52	0.51	5.9	30.09.2008 12:00	01.12.2008 13:00
26	2009	1	-1.5	87									28.0	4.40	0.88	0.68	0.96			
26	2009	2	-2.1	86		0.46		2.55		30.8		0.11	13.0	3.80	0.46	0.35	0.65	1.6	01.12.2008 13:00	06.02.2009 13:00
26	2009	3	0.7	84									43.0	4.50	0.50	0.43	0.43			
26	2009	4	6.2	76		0.41		1.82		48.9		0.08	5.0	6.30	1.27	1.77	0.46	2.0	06.02.2009 13:00	09.04.2009 14:00
26	2009	5	10.6	73									44.0	5.60	0.27	0.36	0.38			
26	2009	6	13.5	71		0.33		1.38		61.8		0.13	45.0	5.00	0.22	0.24	0.21	5.6	09.04.2009 14:00	15.06.2009 11:00
26	2009	7	17.7	78									53.0	4.80	0.16	0.16	0.19			
26	2009	8	16.7	77		0.25		0.97		43.7		0.03	37.0	6.20	0.19	0.23	0.16	4.0	15.06.2009 11:00	17.08.2009 11:00
26	2009	9	12.5	81									33.0	6.20	0.39	0.35	0.54			
26	2009	10	11.9			0.27		1.41		40.0		0.05						9.0	17.08.2009 11:00	01.10.2009 10:30

27	2008	10																		
27	2008	11																		
27	2008	12																		
27	2009	1	6.0			3.44		21.03		30.5		0.14						11.9	29.10.2008 16:00	21.01.2009 11:50
27	2009	2																		
27	2009	3	4.0			2.18		16.79		41.2		0.29						19.5	21.01.2009 12:05	24.03.2009 15:05
27	2009	4																		
27	2009	5	13.0			1.21		11.75		67.6		0.47						24.9	24.03.2009 15:10	01.05.2009 14:40
27	2009	6																		
27	2009	7	21.5			1.40		5.46		66.1		0.32							01.05.2009 14:50	02.07.2009 11:05
27	2009	8																		
27	2009	9	28.0			0.89		8.49		42.9		0.32							02.07.2009 11:05	17.09.2009 11:55
27	2009	10																		
31	2008	10	14.5	65	4.0		9.0		38				65.0	6.89	0.41	0.19	0.33			
31	2008	11	7.9	69	2.0		10.0		32				27.0	6.50	0.15	0.14	0.28			
31	2008	12	6.5	71	1.0		12.0		28			0.38	46.0	6.27	0.16	0.15	0.16	9.5	02.10.2008 12:00	02.12.2008 12:00
31	2009	1	4.7	79	1.0		15.0		33				26.0	6.35	0.23	0.26	0.51			
31	2009	2	7.6	64	1.0		11.0		45			0.26	46.0	6.19	0.17	0.13	0.48	17.5	02.12.2008 12:00	03.02.2009 12:00
31	2009	3	12.1	47	3.0		23.0		58			0.59	9.0	6.42	0.43	0.42	0.30	17.0	03.02.2009 12:00	31.03.2009 12:00
31	2009	4	12.0	52	5.0		25.0		75				17.0	6.46	0.22	0.31	0.25			
31	2009	5	19.0	42	5.0		20.0		74				10.0	7.50	1.49	1.06	1.04			
31	2009	6	23.4	39	5.0		17.0		71			0.71	10.0	7.28	1.22	1.09	0.85	16.9	31.03.2009 12:00	02.06.2009 12:00
31	2009	7	26.3	28	8.0		16.0		76			1.39	0.0					10.9	02.06.2009 12:00	30.07.2009 12:00
31	2009	8	27.0	32	4.0		15.0		77				5.0	7.00	0.40	0.56	0.59			
31	2009	9	20.7	49	5.0		13.0		68				6.0	6.90	0.73	1.28	0.68			
31	2009	10										1.67						18.7	30.07.2009 12:00	01.10.2009 12:00

33	2008	10	13.4	76	0.4		3.6		71				348	6.59	0.37	0.12	0.28			
33	2008	11	7.3	74	0.6		6.3		47				45.0	5.57	0.18	0.28	0.87			
33	2008	12	6.2	78	0.3		2.4		64			0.26	123.6	6.13	0.06	0.08	0.17	12.8	01.10.2008 12:00	01.12.2008 12:00
33	2009	1	4.6	88	0.2		2.3		63				78.4	6.01	0.13	0.07	0.96			
33	2009	2	7.7	71	0.3		2.7		77			0.20	355.0	6.01	0.14	0.26	0.31	6.3	01.12.2008 12:00	04.02.2009 12:00
33	2009	3	12.1	58	0.3		2.6		92				62.0	6.48	0.21	0.31	-0.01			
33	2009	4	11.5	61	0.3		3.2		96			0.55	42.4	5.71	0.15	0.13	0.36	9.2	04.02.2009 12:00	03.04.2009 12:00
33	2009	5	18.7	51	0.4		4.2		93			0.50	9.4	6.75	0.86	0.70	0.92	11.6	03.04.2009 12:00	30.05.2009 12:00
33	2009	6	22.8	47	0.4		3.0		89				9.4	6.42	0.37	0.44	0.49			
33	2009	7	25.6	32	0.3		2.3		103				0.8	7.03						
33	2009	8	26.5	38	0.4		2.6		93			0.67	16.0	6.77	0.38	0.36	0.17	5.1	30.05.2009 12:00	03.08.2009 12:00
33	2009	9	19.6	59	0.4		3.1		100				50.8	5.97	0.30	0.43	0.33			
33	2009	10										0.88						6.1	03.08.2009 12:00	05.10.2009 12:00
35	2008	10	10.6	88	0.49		1.6		45				79.8	4.82	0.28	0.23	0.34			
35	2008	11	5.2	90	0.50		2.3		44				87.6	4.89	0.20	0.19	0.84			
35	2008	12	2.4	92	0.71		3.2		37			0.25	42.0	4.80	0.34	0.32	0.39	7.1	09.10.2008 12:00	16.12.2008 10:00
35	2009	1	0.3	88	1.70		3.6		46				27.9	4.68	0.30	0.34	0.29			
35	2009	2	-1.8	89	2.70		3.8		54			0.27	16.9	4.64	0.52	0.57	0.41	26.7	16.12.2008 10:00	11.02.2009 12:30
35	2009	3	1.7	82	1.90		2.4		73				29.8	5.20	0.45	0.30	0.20			
35	2009	4	7.5	67	1.30		2.5		78			0.45	5.1	4.91	0.61	0.72	0.22	5.1	11.02.2009 12:30	07.04.2009 09:30
35	2009	5	13.0	67	1.00		2.0		73				11.4	5.96	0.69	0.71	0.48			
35	2009	6	16.1	74	0.73		1.7		58			0.32	105.1	4.35	0.16	0.08	0.27	14.5	07.04.2009 09:30	04.06.2009 11:30
35	2009	7	18.5	77	0.64		1.1		51			0.14	119.3	4.35	0.22	0.09	0.11	12.0	04.06.2009 11:30	28.07.2009 13:10
35	2009	8	17.5	80	0.57		1.1		43				60.9	4.67	0.15	0.08	0.31			
35	2009	9	14.9	83	0.50		1.3		47				54.1	4.78	0.21	0.06	0.51			

35	2009	10	7.2	88	0.85		1.5		38			0.11	144.7	4.53	0.26	0.13	0.58	6.5	28.07.2009 13:10	06.10.2009 11:00
40	2008	10	12.9	74	3.1		45.4		19				39.8	5.94	0.72	0.33	0.80			
40	2008	11	8.5	83	3.0		43.3		16				43.4	5.96	1.75	0.99	5.22			
40	2008	12	4.1	83	4.2		46.7		11			0.21	25.0	5.80	1.02	0.49	3.51		03.10.2008 15:50	01.12.2008 16:10
40	2009	1	2.4	80	7.0		56.3		15			0.29	40.6	6.22	1.14	0.67	4.57	13.3	01.12.2008 16:14	30.01.2009 10:18
40	2009	2	5.2	79	4.5		51.4		20				32.6	6.37	1.00	0.59	2.92			
40	2009	3	9.1	63	2.5		46.3		41			0.28	23.4	7.01	2.68	1.25	7.68	28.8	30.01.2009 10:18	31.03.2009 15:30
40	2009	4	14.1	65	2.9		40.8		51				30.0	6.76	1.56	1.33	1.06			
40	2009	5	16.5	67	1.9		30.2		51			0.67	55.6	6.51	0.93	0.98	0.68	21.8	31.03.2009 15:30	29.05.2009 09:50
40	2009	6	19.2	62	1.4		25.4		61				57.0	6.27	0.55	0.50	0.71			
40	2009	7	21.4	57	1.5		22.8		52			3.21	42.2	6.61	1.27	1.18	2.47	15.3	29.05.2009 09:55	31.07.2009 10:49
40	2009	8	21.5	60	2.3		24.1		58				13.0	5.98	2.89	3.19	4.65			
40	2009	9	17.2	71	2.6		34.6		35				24.2	7.28	1.36	1.29	4.40			
40	2009	10	12.9	78	3.2		38.6		19			1.14	47.0	7.09	1.32	0.59	2.25		31.07.2009 10:49	01.10.2009 11:01
41	2008	10	9.8	94	2.5		49.0		19				69.0		2.38	4.01	0.19			
41	2008	11	6.2	95	3.5		44.6		16				27.6		3.73	4.37	0.99			
41	2008	12	2.3	97	3.9		44.5		14			0.15	5.0		4.46	5.95	1.80	17.2	14.10.2008 14:20	17.12.2008 11:10
41	2009	1	-1.8	96	5.5		51.0		13				13.4		3.84	8.84	1.02			
41	2009	2	1.2	95	3.5		45.1		27			0.12	2.0		3.24	5.84	1.30	87.2	17.12.2008 11:10	16.02.2009 09:30
41	2009	3	5.6	87	2.0		45.8		44				7.0		2.07	4.56	0.97			
41	2009	4	13.9	68	3.5		50.5		71			0.27	1.0		3.36	5.52	0.08	81.8	16.02.2009 09:30	15.04.2009 15:00
41	2009	5	14.4	75	1.7		39.6		63				36.0		1.57	1.24	0.13			
41	2009	6	15.8	88	1.4		35.8		56			0.52	69.6		1.34	0.75	0.21	29.0	15.04.2009 15:00	15.06.2009 09:30
41	2009	7	19.4	90	1.6		48.7		55				51.6		2.42	0.71	0.25			

41	2009	8	20.0	85	2.2		46.8		60			0.60	35.7		2.16	1.27	0.07	16.8	15.06.2009 09:30	24.08.2009 15:00
41	2009	9	15.5	90	2.5		45.5		36				30.5		2.23	2.11	0.31			
41	2009	10	8.2	90	2.1		39.3		21			0.52	81.2		3.24	3.90	0.31	14.9	24.08.2009 15:00	22.10.2009 11:30
44	2008	10	1.5	87	3.5		2.0						33.6	5.23	0.14	0.07	0.13			
44	2008	11	-6.6	86	11.8		2.2						24.9	5.05	0.29	0.10	2.64			
44	2008	12	-4.4	84	2.8		1.5			40		0.03	9.7	4.79	0.88	0.32	12.28	6.1	14.10.2008 14:00	01.12.2008 12:20
44	2009	1	-8.9	80	6.0		1.2						6.0	4.94	0.36	0.23	4.45			
44	2009	2	-13.9	79	6.8		1.9			51		0.14	7.3	4.78	0.52	0.33	0.97	1.9	01.12.2008 12:20	01.02.2009 16:55
44	2009	3	-6.9	76	7.4		0.7						5.6	4.88	0.66	0.21	6.57			
44	2009	4	-1.7	70	3.1		0.4			53		0.11	11.3	4.33	1.36	0.27	4.29	3.0	01.02.2009 17:00	01.04.2009 16:15
44	2009	5	5.3	73	9.7		0.3						9.9	3.99	2.89	0.36	1.09			
44	2009	6	8.5	68	6.3		0.7			70		0.08	25.3	3.99	1.55	0.14	1.33	5.0	01.04.2009 16:15	02.06.2009 12:20
44	2009	7	11.7	73	12.8		0.2						46.5	4.37	1.06	0.07	0.40			
44	2009	8	12.3	76	12.0		2.1			40		0.03	87.0	4.37	0.91	0.14	0.13	10.7	02.06.2009 12:25	01.08.2009 21:30
44	2009	9	7.9	80	0.2		0.7						96.5	4.80	0.25	0.09	0.50			
44	2009	10	-0.9	84	1.5					37		0.00	12.0	5.17	0.33	0.16	1.08		01.08.2009 21:30	06.10.2009 12:00
45	2008	10	6.9	85	0.52		5.0		66				109.1	5.28	0.15	0.22	0.08			
45	2008	11	1.9	85	0.62		7.4		60				51.6	5.04	0.12	0.19	0.31			
45	2008	12	-2.0	86	0.65		8.0		58			0.25	138.4	5.10	0.06	0.13	0.15	2.7	02.10.2008 12:00	01.12.2008 10:30
45	2009	1	-3.7	80	0.75		9.0		67				76.2	5.19	0.14	0.11	0.09			
45	2009	2	-2.7	84	0.95		7.9		71			0.89	106.3	4.74	0.11	0.28	0.13	3.5	01.12.2008 10:30	02.02.2009 10:30
45	2009	3	0.4	80	0.65		7.1		86			0.29	86.1	5.38	0.18	0.33	0.56	2.2	02.02.2009 10:30	30.03.2009 10:30
45	2009	4	7.5	73	0.71		7.9		102				28.9	5.39	0.37	0.47	0.09			
45	2009	5	11.8	73	0.63		4.5		96			0.39	45.2	6.54	0.61	0.49	0.46	31.2	30.03.2009 10:30	29.05.2009 10:30

45	2009	6	12.4	79	0.49		3.7		95				99.2	5.83	0.20	0.24	0.10			
45	2009	7	14.8	75	0.72		3.3		90			0.42	133.7	5.96	0.37	0.31	0.27	13.0	29.05.2009 10:30	30.07.2009 10:00
45	2009	8	16.3	74	0.56		4.1		100				69.6	5.66	0.05	0.08	0.02			
45	2009	9	12.2	82	0.70		7.6		80				5.4	5.28	0.71	1.71	0.16			
45	2009	10										0.41						8.8	30.07.2009 10:00	01.10.2009 10:00
50	2008	10	8.4	94	13.0		20.0		21				46.2							
50	2008	11	3.9	97	17.0		19.0		18				31.8							
50	2008	12	-0.2	98	30.0		26.0		17			0.38	27.8					20.6	04.10.2008 13:30	08.12.2008 14:00
50	2009	1	-4.2	98	40.0		42.0		19				17.6							
50	2009	2	-2.5	98	25.0		31.0		28			0.75	47.0					27.6	08.12.2008 14:00	10.02.2009 12:00
50	2009	3	1.2	95	18.0		28.0		43				80.5							
50	2009	4	10.8	64	13.0		31.0		70			0.66	0.2					26.8	10.02.2009 11:00	06.04.2009 11:30
50	2009	5	12.3	75	8.0		24.0		72				46.0							
50	2009	6	14.4	85	6.0		21.0		61			0.80	113.0					37.5	06.04.2009 11:30	03.06.2009 13:30
50	2009	7	18.4	79	4.0		24.0		65				166.0							
50	2009	8	17.6	78	6.0		27.0		62			1.17	32.0					17.3	03.06.2009 13:30	05.08.2009 08:30
50	2009	9	13.6	90	4.0		34.0		45				38.0							
50	2009	10	5.4	93	9.0		29.0		27			0.64	85.0					22.3		
51	2008	10	19.3	64	12.8		44.6		10				30.3						05.08.2009 09:30	15.10.2009 10:00
51	2008	11	16.0	70	16.9		45.8		12				33.4							
51	2008	12	11.7	72	19.8		40.6		13			0.38	63.2					109.3	01.10.2008 11:50	01.12.2008 09:07
51	2009	1	11.3	76	23.9		41.3		14				80.3							
51	2009	2	9.7	69	25.4		37.7		15			0.28	44.6					144.0	01.12.2008 09:08	02.02.2009 08:55
51	2009	3	12.2	67	16.6		41.4		17				90.4							
51	2009	4	16.2	62	13.6		40.4		31			0.32	32.4					156.4	02.02.2009 08:56	01.04.2009 08:49

51	2009	5	21.9	56	13.7		38.4		26				3.5							
51	2009	6	26.4	51	11.3		38.0		26			1.35	0.7					52.1	01.04.2009 08:51	01.06.2009 09:01
51	2009	7	29.3	45	4.6		58.9		35			3.64	1.9					56.0	01.06.2009 09:02	31.07.2009 08:50
51	2009	8	28.1	45	5.0		43.7		59				0.3							
51	2009	9	22.8	63	7.4		48.7		26				80.1							
51	2009	10	19.5	70	11.7		46.1		16			1.62	73.6					50.0	31.07.2009 08:51	01.10.2009 08:59
52	2008	10	9.3	84	3.2		27.1		27				83.1	5.44	0.85	0.44	2.63			
52	2008	11	3.6	88	2.8		23.8		36				60.8	6.47	0.89	0.60	2.11			
52	2008	12	0.8	87	2.9		27.2		31				54.6	6.20	0.32	0.20	1.31			
52	2009	1	-1,5	86	3.8		32.5		43			0.19	39.9	5.92	0.55	0.66	2.65	33.8	11.11.2008 12:30	20.01.2009 09:40
52	2009	2	-2.8	83	4.7		34		51				23.1	6.60	1.06	0.84	4.56			
52	2009	3	0.9	78	3.5	3.17	33.9	41.40	69	63.6			52.1	7.00	0.47	0.38	1.17	24.4	20.01.2009 09:45	20.03.2009 09:40
52	2009	4	8.4	61	3.6		31.2		67				5.5	6.97	1.26	1.13	1.00			
52	2009	5	13.0	62	3.5	1.58	19.9	15.67	61	63.8		0.43	9.7	7.47	0.77	0.01	2.95	40.4	20.03.2009 10:00	22.05.2009 10:05
52	2009	6	15.3	71	3.6		15.4		44				82.0	6.28	0.34	0.01	0.46			
52	2009	7	18.8	73	3.7	0.78	19.0	12.08	41	57.0		0.49	136.8	6.25	0.09	0.04	0.06	36.4	22.05.2009 10:05	21.07.2009 09:13
52	2009	8	17.4	74	3.7		20.5		35				50.6	6.17	0.25	0.01	0.44			
52	2009	9	14.8	77	3.5	0.74	21.7	19.73	31	39.2		0.46	34.7	6.31	0.27	0.01	1.61	28.7	21.07.2009 09:15	17.09.2009 10:50
52	2009	10	5.8	86	2.6		25.4		28				82.9	6.30	0.33	0.13	1.26			
52	2009	11	9.0			0.50		18.59		26.8		0.20								
53	2008	10	10.6	79	2.0		34.0		20				28.0							
53	2008	11	7.2	78	2.0		26.0		26				58.0							
53	2008	12	2.5	80	3.0		28.0		24			0.16	40.0					12.4	10.10.2008 09:00	05.12.2008 09:00
53	2009	1	-1.6	81	5.0		35.0		22				35.0							
53	2009	2	1.2	77	3.0		24.0		40			0.62	72.0					7.3	05.12.2008 09:00	06.02.2009 11:00

53	2009	3	5.8	73	2.0		20.0		55				142.0							
53	2009	4	14.4	63	4.0		29.0		72			0.76	4.0					8.5	06.02.2009 11:00	09.04.2009 15:00
53	2009	5	16.3	67	2.0		19.0		71				83.0							
53	2009	6	18.2	70	1.0		14.0		69			1.03	141.0					16.0	09.04.2009 11:00	09.06.2009 15:00
53	2009	7	21.4	67	2.0		16.0		69				148.0							
53	2009	8	21.1	70	2.0		17.0		70			1.26	84.0					7.5	09.06.2009 15:00	11.08.2009 15:00
53	2009	9	17.2	75	2.0		26.0		49				20.0							
53	2009	10	9.9	79	2.0		25.0		32			1.30	41.0					8.1	11.08.2009 15:00	12.10.2009 14:00
54	2008	10	12.6	71	14.4		63.0		13				41.2	5.53	2.88	0.18				
54	2008	11	6.7	76	19.5		62.7		15				21.8	6.07	12.64	0.49				
54	2008	12	2.7	77	17.1		53.0		22				36.2	5.28	16.78	1.42				
54	2009	1	-0.8	85	40.7		83.0		14				56.4	6.81	9.00	0.92				
54	2009	2	1.0	74	17.4		51.1		34				29.3	6.77	6.77	0.96				
54	2009	3	5.4	69	12.2		51.1		37				32.6	5.54	7.81	0.40				
54	2009	4	11.8	62	13.4		68.8		38				50.2	6.80	4.48	0.35				
54	2009	5	17.3	62	5.9		50.9		41				66.4	5.64	5.41	0.34				
54	2009	6	20.1	63	5.2		48.2		58				51.2	5.82	6.29	0.56				
54	2009	7	22.0	64	5.8		44.5		58				76.6	5.50	3.17	0.60				
54	2009	8	21.8	63	4.1		54.1		57				128.9	5.46	3.56	0.35				
54	2009	9	17.3	69	6.0		55.3		35				59.9	6.38	1.12	0.19				

Table A.2: Optional data

	Sampling period		Optional						
			Precipitation						Particles
			Conductivity	NH_4^+	Na^+	Ca^{2+}	Mg^{2+}	K^+	conc. PM_{10}
Site no	Year	Month	µS/cm	mgN/l	mgNa/l	mgCa/l	mgMg/l	mgK/l	µg/m^3
01	2008	10	30.0						19.5
01	2008	11	23.0						20.7
01	2008	12	31.0						21.4
01	2009	1	48.0						n
01	2009	2	48.0						16.6
01	2009	3	34.0						15.7
01	2009	4	12.0						25.2
01	2009	5	12.0						13.4
01	2009	6	18.0						11.4
01	2009	7	14.0						17.3
01	2009	8	60.0						17.2
01	2009	9	60.0						35.0
01	2009	10	18.0						47.1
03	2008	10	32.0						32.1
03	2008	11	50.0						35.1
03	2008	12	42.0						30.8
03	2009	1	118.0						n
03	2009	2	55.0						19.5
03	2009	3	49.0						18.7
03	2009	4	67.0						43.5
03	2009	5	26.0						22.5
03	2009	6	12.0						20.6
03	2009	7	23.0						13.2
03	2009	8	24.0						13.2
03	2009	9	97.0						63.0
03	2009	10	59.0						57.7
10	2008	10	41.2	1.05	1.49	3.83	0.44	0.20	29.0
10	2008	11	42.6	1.53	1.65	2.22	0.30	0.22	28.0
10	2008	12	38.5	0.90	1.31	1.67	0.23	0.10	32.0
10	2009	1	39.7	1.00	1.93	1.45	0.24	0.20	38.0
10	2009	2	32.4	1.20	2.00	1.90	0.10	-0.10	20.0
10	2009	3	41.2	2.20	1.70	1.40	0.23	-0.10	24.0
10	2009	4	40.0	2.04	0.85	2.40	0.24	0.40	40.0
10	2009	5	76.4	3.00	1.20	1.00	0.30	1.70	24.0
10	2009	6	21.7	0.90	0.50	0.70	0.10	0.60	21.0
10	2009	7	20.1	1.20	0.40	2.80	-0.10	0.20	23.0
10	2009	8	31.2	0.70	1.00	1.10	0.20	0.30	31.0
10	2009	9	21.5	0.80	1.10	1.60	0.10	0.20	26.0

10	2009	10	38.5	0.80	3.10	0.70	0.40	0.10	25.0
13	2008	10							
13	2008	11							
13	2008	12							
13	2009	1							
13	2009	2							
13	2009	3							
13	2009	4							
13	2009	5							
13	2009	6							
13	2009	7							
13	2009	8							
13	2009	9							
13	2009	10							
14	2008	10							
14	2008	11							
14	2008	12							
14	2009	1							
14	2009	2							
14	2009	3							
14	2009	4							
14	2009	5							
14	2009	6							
14	2009	7							
14	2009	8							
14	2009	9							
14	2009	10							
15	2008	10							
15	2008	11							
15	2008	12							
15	2009	1							
15	2009	2							
15	2009	3							
15	2009	4							
15	2009	5							
15	2009	6							
15	2009	7							
15	2009	8							
15	2009	9							
15	2009	10							
16	2008	10							
16	2008	11							
16	2008	12							
16	2009	1							
16	2009	2							
16	2009	3							
16	2009	4							
16	2009	5							
16	2009	6							
16	2009	7							
16	2009	8							
16	2009	9							
16	2009	10							

21	2008	10	130.3	0.17	0.90	0.33	0.15	0.05	
21	2008	11	22.9	0.32	1.29	0.72	0.22	0.11	
21	2008	12	45.4	1.25	2.96	1.02	0.30	0.20	
21	2009	1	30.9	0.29	4.21	0.49	0.10	0.05	
21	2009	2	19.9	0.30	1.40	1.11	0.06	0.05	
21	2009	3	28.1	0.57	1.13	0.75	0.09	0.06	
21	2009	4	23.4	3.42	0.71	0.73	0.12	0.24	
21	2009	5	17.2	1.49	0.76	0.55	0.13	0.50	
21	2009	6	12.3	1.10	0.50	0.53	0.13	1.22	
21	2009	7	11.2	0.33	0.70	0.31	0.10	0.14	
21	2009	8	14.9	1.21	0.09	0.03	0.01	0.02	
21	2009	9	9.6	0.00	0.35	0.45	0.06	1.10	
21	2009	10							
23	2008	10	21.2	0.19	2.28	0.17	0.32	0.13	1.7
23	2008	11	29.7	0.19	2.89	0.15	0.37	0.12	3.7
23	2008	12	30.3	0.35	1.85	0.14	0.25	0.10	3.8
23	2009	1	27.7	0.39	1.54	0.07	0.16	0.07	6.4
23	2009	2	18.5	0.18	0.24	0.05	0.03	0.03	3.3
23	2009	3	23.9	0.67	0.64	0.08	0.07	0.06	6.5
23	2009	4	27.4	2.28	0.37	0.18	0.04	0.04	12.8
23	2009	5	15.2	0.40	0.70	0.13	0.09	0.10	6.9
23	2009	6	10.2	0.20	0.30	0.03	0.04	0.04	5.2
23	2009	7	13.4	0.26	0.55	0.06	0.07	0.04	6.9
23	2009	8	19.4	0.45	1.02	0.27	0.12	0.08	6.2
23	2009	9	13.6	0.31	0.68	0.08	0.08	0.07	4.7
23	2009	10	13.3	0.09	0.66	0.06	0.08	0.04	3.7
24	2008	10							
24	2008	11							
24	2008	12							
24	2009	1							
24	2009	2							
24	2009	3							
24	2009	4							
24	2009	5							
24	2009	6							
24	2009	7							
24	2009	8							
24	2009	9							
24	2009	10							
26	2008	10							
26	2008	11							
26	2008	12							
26	2009	1							
26	2009	2							
26	2009	3							
26	2009	4							
26	2009	5							
26	2009	6							
26	2009	7							
26	2009	8							
26	2009	9							
26	2009	10							
27	2008	10							
27	2008	11							

27	2008	12							
27	2009	1							
27	2009	2							
27	2009	3							
27	2009	4							
27	2009	5							
27	2009	6							
27	2009	7							
27	2009	8							
27	2009	9							
27	2009	10							
31	2008	10	24.7	0.12	0.24	4.16	0.15	0.14	
31	2008	11	8.1	0.20	0.32	0.55	0.08	0.10	14.0
31	2008	12	5.5	0.19	0.29	0.36	0.05	0.11	15.0
31	2009	1	8.7	0.27	0.40	0.44	0.06	0.17	15.0
31	2009	2	6.2	0.19	0.36	0.24	0.04	0.09	18.0
31	2009	3	14.0	0.44	0.15	0.33	0.06	0.08	17.0
31	2009	4	10.3	0.40	0.37	0.39	0.08	0.10	11.0
31	2009	5	61.1	0.93	0.84	7.10	0.35	0.36	14.0
31	2009	6	52.6	0.83	0.52	6.37	0.28	0.26	15.0
31	2009	7							20.0
31	2009	8	25.2	0.39	0.23	3.18	0.24	0.21	20.0
31	2009	9	35.9	0.61	0.21	1.92	0.18	0.13	18.0
31	2009	10							
33	2008	10	14.23	0.19	0.26	1.82	0.08	0.12	20.6
33	2008	11	13.01	0.06	0.62	0.35	0.07	0.21	5.4
33	2008	12	4.10	0.05	0.14	0.26	0.03	0.11	5.8
33	2009	1	8.47	0.04	0.68	0.35	0.09	0.11	6.8
33	2009	2	8.86	0.21	0.26	0.32	0.06	0.14	12.0
33	2009	3	10.74	0.56	0.19	0.32	0.05	0.14	13.2
33	2009	4	6.94	0.07	0.34	0.21	0.05	0.10	7.8
33	2009	5	41.25	0.68	0.57	4.54	0.28	0.31	11.1
33	2009	6	18.81	0.24	0.29	1.63	0.11	0.09	12.4
33	2009	7	35.80						13.9
33	2009	8	17.13	0.38	0.25	1.86	0.09	0.12	17.6
33	2009	9	13.22	0.37	0.26	1.05	0.07	0.11	14.4
33	2009	10							
35	2008	10	8.8	0.12	0.25	0.45	0.06	0.02	4.9
35	2008	11	8.0	0.05	0.43	0.27	0.08	0.02	5.6
35	2008	12	15.6	0.14	0.27	0.36	0.04	0.03	6.4
35	2009	1	7.3	0.13	0.19	0.17	0.03	0.03	6.4
35	2009	2	16.8	0.19	0.29	0.24	0.03	0.04	9.1
35	2009	3	8.9	0.26	0.14	0.82	0.04	0.03	7.3
35	2009	4	14.5	0.86	0.17	0.31	0.02	0.05	7.3
35	2009	5	23.0	0.88	0.36	2.78	0.27	0.53	8.8
35	2009	6	5.0	0.10	0.80	0.59	0.06	0.09	6.6
35	2009	7	-10.0	0.07	0.13	0.57	0.04	0.11	7.3
35	2009	8	-10.0	0.07	0.26	0.41	0.04	0.06	6.4
35	2009	9	-10.0	0.07	0.33	0.45	0.08	0.06	6.9
35	2009	10	-10.0	0.11	0.36	0.11	0.04	0.05	6.5
40	2008	10	18.0	0.33	0.50	2.00	0.08	0.10	29.5
40	2008	11	35.2	0.84	2.96	4.02	0.46	0.24	23.4
40	2008	12	26.2	1.05	2.12	2.42	0.24	0.19	28.7
40	2009	1	31.6	0.94	2.76	2.39	0.19	0.18	41.2

40	2009	2	28.4	0.86	1.82	2.20	0.16	0.17	31.1
40	2009	3	54.7	1.41	4.48	7.99	0.59	0.49	32.4
40	2009	4	40.5	1.87	0.69	6.05	0.21	0.53	34.6
40	2009	5	29.3	1.64	0.47	2.75	0.12	0.30	23.3
40	2009	6	26.4	1.04	0.53	2.02	0.11	0.26	22.2
40	2009	7	78.4	1.16	1.56	6.75	0.28	0.67	21.4
40	2009	8	56.6	2.11	3.25	10.74	0.63	1.34	25.3
40	2009	9	47.0	5.48	2.81	4.08	0.39	0.64	33.2
40	2009	10	51.2	4.22	1.48	2.74	0.20	0.69	31.1
41	2008	10		2.07	0.31	0.23	0.03	0.24	32.9
41	2008	11		2.28	0.51	0.26	0.05	0.17	33.0
41	2008	12		2.94	0.68	0.28	0.16	2.25	45.2
41	2009	1		4.01	0.67	0.18	0.05	0.30	54.0
41	2009	2		2.44	0.78	0.36	0.06	0.11	39.8
41	2009	3		2.03	0.78	0.29	0.05	0.14	54.0
41	2009	4		2.84	0.24	0.54	0.02	0.19	39.8
41	2009	5		0.58	0.30	0.27	0.02	0.11	31.2
41	2009	6		0.43	0.43	0.29	0.01	0.11	45.7
41	2009	7		0.73	0.50	0.27	0.07	0.12	25.5
41	2009	8		0.71	0.62	0.28	0.00	0.17	22.5
41	2009	9		0.77	0.59	0.31	0.01	0.17	27.0
41	2009	10		2.20	0.31	0.00	0.00	0.17	30.8
44	2008	10	4.9	0.07	0.06	0.32	0.02	0.05	
44	2008	11	16.3	0.03	1.35	0.21	0.22	0.06	
44	2008	12	72.6	0.17	5.78	0.42	0.80	0.30	
44	2009	1	48.4	0.14	2.91	0.21	0.30	0.15	
44	2009	2	17.5	0.19	0.63	0.27	0.16	0.11	
44	2009	3	31.2	0.14	3.70	0.19	0.45	0.15	
44	2009	4	39.5	0.22	2.52	0.21	0.34	0.10	
44	2009	5	64.2	0.36	1.33	0.27	0.19	0.06	
44	2009	6	49.2	0.17	0.82	0.16	0.12	0.08	
44	2009	7	25.8	0.10	0.29	0.11	0.07	0.08	
44	2009	8	24.9	0.28	0.18	0.09	0.03	0.09	
44	2009	9	10.8	0.01	0.32	0.05	0.06	0.05	
44	2009	10	13.0	0.16	0.66	0.48	0.10	0.05	
45	2008	10	6.6	0.25	0.03	0.14	0.02	0.08	13.3
45	2008	11	7.4	0.14	0.17	0.07	0.02	0.02	6.8
45	2008	12	5.1	0.06	0.08	0.04	0.01	0.01	4.4
45	2009	1	5.1	0.15	0.05	0.04	0.01	0.02	4.8
45	2009	2	10.3	0.13	0.06	0.03	0.01	0.01	5.9
45	2009	3	9.5	0.46	0.31	0.12	0.04	0.03	10.4
45	2009	4	12.5	0.63	0.04	0.41	0.03	0.10	13.2
45	2009	5	18.6	0.62	0.28	1.63	0.13	0.20	11.4
45	2009	6	6.7	0.37	0.05	0.30	0.03	0.05	8.3
45	2009	7	10.9	0.38	0.18	0.88	0.07	0.05	9.3
45	2009	8	2.6	0.11	0.01	0.06	0.01	0.01	11.1
45	2009	9	29.5	2.11	0.08	0.38	0.06	0.47	13.4
45	2009	10							
50	2008	10							48
50	2008	11							39
50	2008	12							54
50	2009	1							66
50	2009	2							52
50	2009	3							36

50	2009	4							48
50	2009	5							27
50	2009	6							23
50	2009	7							27
50	2009	8							31
50	2009	9							42
50	2009	10							39
51	2008	10							58.2
51	2008	11							64.4
51	2008	12							53.0
51	2009	1							65.3
51	2009	2							52.2
51	2009	3							53.0
51	2009	4							47.9
51	2009	5							47.0
51	2009	6							40.8
51	2009	7							46.8
51	2009	8							36.1
51	2009	9							43.9
51	2009	10							45.2
52	2008	10	60.4	0.14	1.53	0.96	0.34	0.20	40.9
52	2008	11	31.5	0.49	1.18	0.87	0.36	0.45	38.7
52	2008	12	22.6	0.35	1.24	1.28	0.31	0.31	41.1
52	2009	1	28.4	0.55	2.10	1.30	0.42	0.50	45.7
52	2009	2	40.8	0.70	3.23	2.21	0.66	0.25	47.3
52	2009	3	20.8	0.43	0.87	1.15	0.38	0.32	51.2
52	2009	4	45.4	1.15	1.21	3.60	0.65	0.35	60.0
52	2009	5	99.40	0.033	5.06	4.70	1.73		31.8
52	2009	6	24.4	0.19	1.52	1.09	0.51	3.91	24.6
52	2009	7	5.7	0.033	0.26	0.44	0.15	0.11	31.5
52	2009	8	18.50	0.033	0.68	0.90	0.28	1.03	33.7
52	2009	9	32.30	0.033	0.95	0.93	0.58	4.70	35.5
52	2009	10	34.90	0.80	0.50	1.40	0.89	5.55	36.4
52	2009	11							
53	2008	10							29.0
53	2008	11							25.0
53	2008	12							22.0
53	2009	1							47.0
53	2009	2							19.0
53	2009	3							16.0
53	2009	4							28.0
53	2009	5							16.0
53	2009	6							13.0
53	2009	7							15.0
53	2009	8							17.0
53	2009	9							23.0
53	2009	10							20.0
54	2008	10							70.4
54	2008	11							94.3
54	2008	12							60.3
54	2009	1							148.0
54	2009	2							52.8
54	2009	3							45.5
54	2009	4							49.8

54	2009	5							38.4
54	2009	6							54.0
54	2009	7							40.2
54	2009	8							41.1
54	2009	9							48.8

Station 52:

	Discrepancy between measured and calculated conductivity values, value is doubtful
	Discrepancy is discovered in ion balance calculation, value is doubtful
	Discrepancy is discovered in ion balance calculation, value is credible

Appendix B

Yearly average values for the test sites for the exposure period.

Table B.1: Mandatory data including measurement with IVL samplers (gray cells).

		Mandatory															
		Climate		Gases								Precipitation					Particles
Site no	Sampling period Year	Temp	RH	SO_2	IVL-passive SO_2	NO_2	IVL-passive NO_2	O_3	IVL-passive O_3	HNO_3	IVL-passive HNO_3	Amount	H^+	SO_4^{2-}	NO_3^-	Cl^-	IVL passive sampler Reported by IVL-Bi monthly avarages, (µg cm-2 month-1)
		°C	%	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	µg/m^3	mm	pH	mgS/l	mgN/l	mgCl/l	
01	08/09	10.1	74	6.5		33.8		45			0.82	525.0	6.11	2.48	9.02	1.22	7.2
03	08/09	9.3	80	13.5		23.8		42			0.55	521.2	5.56	5.84	9.64	0.50	14.2
10	08/09	10.8	81	12.6		33.8		33			0.49	662.7	5.70	1.36	0.69	1.21	15.6
13	08/09	16.9	67	13.5		46.1		36			0.71	823.4	4.70	1.69	1.49	3.99	40.7
14	08/09	15.9	69	0.0		8.0		42			0.74	857.0	4.97	1.46	0.90	4.10	36.9
15	08/09	15.0	56	4.4		56.5		42			1.62	1179.0	4.89	1.56	1.23	3.37	50.8
16	08/09	13.7	79	4.3		27.8		40			1.35	794.6	5.19	1.32	0.71	3.07	15.9
21	08/09	6.9	76	2.0		40.2			33		0.19	737.0	5.52	0.54	0.43	2.02	18.8
23	08/09	4.2	81	0.1		1.3		48		0.33	0.14	1392.5	4.77	0.41	0.43	2.11	5.4
24	08/09	7.8	76		0.83		10.9		53		0.32	270.4	5.25	0.42	0.26	0.47	22.1
26	08/09	7.1	82		0.35		1.8		43		0.08	452.0	4.66	0.35	0.36	0.50	3.8
27	08/09	14.5[1]			1.89		14.2		44		0.27						21.3
31	08/09	15.1	53	3.7		15.5		56			0.83	267.0	6.45	0.35	0.29	0.39	14.4
33	08/09	14.7	61	0.4		3.2		82			0.51	827.6	6.01	0.17	0.23	0.37	9.0
35	08/09	8.8	81	1.1		2.2		54			0.25	639.9	4.59	0.25	0.18	0.36	13.1
40	08/09	12.7	70	3.1		38.9		36			0.99	426.8	6.23	1.23	0.91	2.78	19.8
41	08/09	10.1	88	2.8		44.8		40			0.37	348.4		2.80	3.94	0.70	41.1
44	08/09	0.4	78	6.9		1.2			49		0.08	363.6	4.47	0.73	0.13	1.19	5.3
45	08/09	6.3	80	0.7		6.3		81			0.45	949.7	5.23	0.19	0.25	0.20	10.5

50	08/09	7.7	84	15.3		27.2		39			0.73	651.1					26.0
51	08/09	18.7	62	14.2		43.3		24			1.26	461.1					103.6
52	08/09	8.2	77	3.5	1.4	24.8	21.4	44	50		0.35	632.9	6.03	0.45	0.24	1.28	32.7
53	08/09	11.2	73	2.5		24.0		49			0.87	855.0					10.3
54	08/09	11.5	70	13.5		57.1		35				650.7	5.67	5.59	0.51		

[1] Average for 5 out of 12 months (Jan, March, May, July, September)

Table B.2: Optional data

		Optional						
		Precipitation						Particles
Site no	Sampling period Year	Cond µS/cm	NH_4^+ mgN/l	Na^+ mgNa/l	Ca^{2+} mgCa/l	Mg^{2+} mgMg/l	K^+ mgK/l	Conc. PM_{10} µg/m³
01	08/09	25.6						19.4
03	08/09	33.6						28.4
10	08/09	33.2	1.37	1.16	1.85	0.16	0.27	28.0
13	08/09							
14	08/09							
15	08/09							
16	08/09							
21	08/09	23.0	0.85	1.02	0.48	0.10	0.23	
23	08/09	21.1	0.37	1.29	0.12	0.16	0.08	5.70
24	08/09							
26	08/09							
27	08/09							
31	08/09	16.4	0.27	0.33	1.86	0.11	0.13	16.10
33	08/09	9.5	0.20	0.30	0.51	0.06	0.13	11.80
35	08/09	7.6	0.12	0.35	0.50	0.06	0.07	6.90
40	08/09	37.3	1.38	1.71	3.85	0.25	0.36	28.90
41	08/09		1.89	0.48	0.26	0.04	0.28	37.40
44	08/09	23.7	0.13	0.71	0.14	0.11	0.08	
45	08/09	8.2	0.27	0.11	0.29	0.03	0.05	9.40
50	08/09							41.10
51	08/09							50.70
52	08/09	26.9	0.23	1.13	1.09	0.36	1.26	40.20
53	08/09							22.50
54	08/09							62.00

Table B.3: Months included in the calculation of the annual averages

Site no	Year	Months included annual average
01	08/09	okt-sept
03	08/09	okt-sept
10	08/09	okt-sept
13	08/09	nov-oct
14	08/09	nov-oct
15	08/09	nov-oct
16	08/09	nov-oct
21	08/09	okt-sept
23	08/09	okt-sept
24	08/09	okt-sept
26	08/09	okt-sept
27	08/09	des-nov
31	08/09	okt-sept
33	08/09	okt-sept
35	08/09	okt-sept
40	08/09	okt-sept
41	17/09	okt-sept
44	08/09	okt-sept
45	08/09	okt-sept
50	08/09	okt-sept
51	08/09	okt-sept
52	08/09	okt-sept
53	08/09	okt-sept
54	08/09	okt-sept

Appendix C

Tri and bi-monthly mean values for passive gas sampling and particle deposition on IVL samplers in a position sheltered from rain.

Table C.1: Particle deposition on IVL passive samplers sheltered from rain. Tri- and bi-monthly samples (µg cm^{-2} $month^{-1}$).

Station	start	stop	days	mass	Cl^-	NO_3^-	SO_4^{2-}	NH_4^+	Ca^{2+}	Mg^{2+}	Na^+	K^+	ln(R0/R)	note	ionb.	water soluble	water soluble
				µg cm^{-2} $month^{-1}$									$month^{-1}$		+/-	µg cm^{-2} $month^{-1}$	%
Prague	23.10.2008	12.02.2009	112	7	0.17	0.27	0.40	0.05	0.18	0.01	0.16	0.02	0.01		1.14	1	18 %
Prague	12.02.2009	12.05.2009	89	6	0.04	0.19	0.14	0.02	0.17	<0.0	0.06	<0.0	0.00	Moist in storage container	1.94	1	11 %
Prague	12.05.2009	04.08.2009	84	9	0.01	0.19	0.13	0.02	0.18	<0.0	0.03	0.03	0.00		2.04	1	7 %
Prague	04.08.2009	20.10.2009												filter blown away		0	
Kopisty	24.10.2008	18.02.2009	117	12	0.25	0.98	1.08	0.30	0.24	0.03	0.31	0.07	0.01		1.02	3	28 %
Kopisty	19.02.2009	06.05.2009	76	17	0.02	0.22	0.65	0.06	0.26	0.02	0.09	0.06	0.00		1.35	1	8 %
Kopisty	06.05.2009	06.08.2009												filter blown away		0	
Kopisty	06.08.2009	20.10.2009												filter blown away		0	
Bottrop	07.10.2008	01.12.2008	55	23	0.54	0.23	1.19	0.06	0.50	0.07	0.41	0.06	0.01		1.24	3	13 %
Bottrop	01.12.2008	10.02.2009	71	11	0.56	0.35	1.08	0.13	0.33	0.03	0.48	0.04	0.00		1.10	3	27 %
Bottrop	10.02.2009	31.03.2009	49	14	0.12	0.48	0.77	0.06	0.36	0.06	0.24	0.04	0.00		1.40	2	16 %
Bottrop	31.03.2009	01.06.2009	62	21	0.03	0.38	0.44	0.04	0.35	0.03	0.05	0.07	0.01		1.65	1	7 %

Bottrop	01.06.2009	31.07.2009	60	10	0.03	0.33	0.39	0.02	0.25	0.03	0.09	0.03	0.00		1.47	1	12 %
Bottrop	31.07.2009	07.10.2009	68	15	0.12	0.60	0.55	0.04	0.37	0.05	0.15	0.14	0.00		1.42	2	13 %
Rome	29.10.2008	24.12.2008	56	50	11.77	0.54	3.13	0.06	1.34	0.73	7.01	0.34	0.03		1.09	25	50 %
Rome	24.12.2008	03.02.2009	41	42	6.07	1.19	1.67	0.05	1.49	0.41	3.59	0.23	0.01		1.21	15	35 %
Rome	03.02.2009	28.04.2009	84	60	9.12	1.44	2.14	0.06	1.32	0.61	5.42	0.31	0.03		1.12	20	34 %
Rome	28.04.2009	26.06.2009	59	14	0.14	0.72	0.20	0.01	0.27	0.04	0.23	0.11	0.00		1.56	2	12 %
Rome	30.06.2009	27.08.2009	58	52	3.25	4.26	1.28	0.04	1.71	0.31	2.59	0.19	0.03	Start 4 days later than previous stop.	1.24	14	26 %
Rome	27.08.2009	04.11.2009	69	25	1.19	1.33	0.52	0.02	0.78	0.10	0.86	0.07	0.00		1.33	5	19 %
Casaccia	17.10.2008	17.12.2008	61	13	1.20	0.58	0.38	0.02	0.27	0.11	0.84	0.08	0.00		1.22	3	27 %
Casaccia	18.12.2008	24.02.2009	68	17	1.96	0.96	0.54	0.04	0.38	0.16	1.34	0.09	0.00		1.15	5	32 %
Casaccia	24.02.2009	27.04.2009	62	130	4.54	1.73	1.24	0.06	0.81	0.35	2.94	0.80	0.00	Daub on the filter	1.22	12	10 %
Casaccia	27.04.2009	30.06.2009	64	33	1.08	2.34	0.67	0.03	1.23	0.13	0.93	0.16	0.00		1.44	7	20 %
Casaccia	26.06.2009	26.08.2009	61	13	0.09	0.70	0.16	0.02	0.23	0.03	0.25	0.04	0.00	Starts before previous period has stopped.	1.55	2	12 %
Casaccia	26.08.2009	02.11.2009	68	16	0.25	0.98	0.26	0.03	0.30	0.05	0.37	0.07	0.00		1.36	2	15 %
Milan	21.10.2008	17.12.2008	57	25	0.59	0.26	0.85	<0.0	0.66	0.04	0.44	0.44	0.04	Filter detached	1.75	3	13 %
Milan	17.12.2008	19.02.2009	64	15	0.67	0.55	1.18	0.08	0.53	0.05	0.70	0.12	0.02		1.31	4	26 %
Milan	19.02.2009	21.04.2009	61	29	0.09	1.07	0.62	0.04	0.81	0.05	0.23	0.11	0.00		1.81	3	10 %

Milan	21.04.2009	22.06.2009	62	43	0.11	1.26	0.49	0.05	0.73	0.05	0.20	0.12	0.02		1.65	3	7 %
Milan	22.06.2009	21.08.2009	60	150	0.36	13.69	1.36	0.38	4.79	0.27	0.62	0.41	0.06	Filter has detached in one edge	1.24	22	15 %
Milan	21.08.2009	29.10.2009	69	43	0.27	3.19	0.85	0.12	1.35	0.11	0.33	0.48	0.00	Filter has detached in one edge	1.43	7	15 %
Venice	23.10.2008	23.12.2008	61	14	0.95	0.58	1.16	0.02	0.52	0.13	0.84	0.08	0.02		1.26	4	30 %
Venice	23.12.2008	26.02.2009	65	10	0.35	0.56	0.71	0.03	0.42	0.07	0.49	0.04	0.00		1.50	3	26 %
Venice	26.02.2009	22.04.2009	55											Sampler destroyed according to protocol.		0	
Venice	22.04.2009	26.06.2009	65	15	0.12	1.36	0.42	0.02	0.66	0.07	0.34	0.05	0.01		1.65	3	20 %
Venice	26.06.2009	27.08.2009	62	14	0.07	0.29	0.11	0.01	0.14	<0.0	0.07	0.53	0.00		2.94	1	9 %
Venice	27.08.2009	27.10.2009	61	27	0.16	2.92	0.73	0.05	1.25	0.12	0.42	0.13	0.01	Filter detached in one edge	1.45	6	22 %
Berlin	14.10.2008	17.12.2008	64	17	1.70	0.27	0.87	0.05	0.49	0.02	1.14	0.04	0.02		1.13	5	27 %

Berlin	17.12.2008	16.02.2009	61	87	20.74	0.35	4.11	0.85	2.04	0.03	14.01	0.13	0.17	Filter attached to the plastic band, some filter material might be lost.	1.13	42	48 %
Berlin	16.02.2009	15.04.2009	58	82	11.31	1.04	2.83	0.06	1.86	0.04	7.55	0.10	0.14		1.09	25	30 %
Berlin	15.04.2009	15.06.2009	61	29	0.09	0.48	0.20	0.02	0.40	0.02	0.11	0.07	0.03		2.05	1	5 %
Berlin	15.06.2009	24.08.2009	70	17	0.05	0.48	0.19	0.02	0.35	0.02	0.06	0.11	0.00		1.92	1	8 %
Berlin	24.08.2009	22.10.2009	59	15	0.08	0.41	0.21	0.01	0.43	0.02	0.06	0.04	0.00		2.09	1	9 %
Oslo	07.10.2008	02.12.2008	56	19	1.19	0.25	0.48	0.05	0.24	0.07	0.84	0.05	0.05	Filter detached in one edge	1.21	3	17 %
Oslo	02.12.2008	02.02.2009	62	12	1.52	0.38	0.63	0.09	0.21	0.05	1.09	0.04	0.01		1.10	4	33 %
Oslo	02.02.2009	01.04.2009	58	18	1.31	0.52	0.87	0.02	0.60	0.04	1.00	0.03	0.01	Filter detached in one edge	1.25	4	25 %
Oslo	01.04.2009	02.06.2009	62	27	0.15	0.52	0.22	0.02	0.24	0.04	0.22	0.12	0.00		1.69	2	6 %
Oslo	02.06.2009	03.08.2009	62	18	0.58	0.55	0.26	0.02	0.25	0.09	0.43	0.25	0.00	Filter detached in one edge	1.53	2	13 %

Oslo	03.08.2009	05.10.2009	63	6	0.19	0.14	0.10	<0.0	0.12	0.02	0.16	<0.1	0.00	Filter not properly attached to the sampler.	1.76	1	12 %
Birkenes	08.10.2008	01.12.2008	54	7	1.03	0.15	0.29	0.03	0.16	0.07	0.72	0.05	0.00	Storage container and filter were wet.	1.28	3	36 %
Birkenes	01.12.2008	01.02.2009	62	4	0.28	0.18	0.11	0.02	0.15	0.03	0.22	<0.0	0.00		1.67	1	27 %
Birkenes	01.02.2009	01.04.2009	59	3	0.20	0.26	0.20	0.02	0.09	0.03	0.24	<0.0	0.00		1.36	1	33 %
Birkenes	01.04.2009	01.06.2009	61	7	0.21	0.24	0.11	0.01	0.04	0.03	0.21	0.04	0.00		1.24	1	13 %
Birkenes	01.06.2009	01.08.2009	61	6	0.16	0.10	0.09	0.01	0.07	0.02	0.14	0.06	0.00		1.59	1	10 %
Birkenes	01.08.2009	06.10.2009												not received		0	
Svanvik	14.10.2008	01.12.2008	48	6	0.50	0.08	0.20	0.02	0.09	0.04	0.35	0.04	0.00		1.28	1	22 %
Svanvik	01.12.2008	01.02.2009	62	2	0.18	0.12	0.20	0.02	0.10	0.02	0.13	<0.0	0.00		1.26	1	42 %
Svanvik	01.02.2009	01.04.2009	59	3	0.14	0.11	0.13	<0.0	0.06	<0.0	0.13	<0.0	0.00		1.58	1	21 %
Svanvik	01.04.2009	02.06.2009	62	5	0.24	0.05	0.13	<0.0	0.07	0.02	0.18	<0.0	0.00		1.46	1	15 %
Svanvik	02.06.2009	01.08.2009	60	11	0.09	0.07	0.28	0.03	0.15	0.03	0.11	0.21	0.00	Filter detached in one edge	2.27	1	9 %
Svanvik	01.08.2009	06.10.2009	66											Sampler missing		0	
Stockholm, Södermalm	02.10.2008	05.12.2008	64	17	1.02	0.46	0.76	0.04	0.36	0.06	0.81	0.04	0.00		1.18	4	21 %
Stockholm, Södermalm	05.12.2008	03.02.2009	60	26	1.48	0.70	0.80	0.08	0.34	0.04	1.16	0.04	0.00		1.10	5	18 %

Stockholm, Södermalm	03.02.2009	08.04.2009	64	28	0.37	0.47	0.29	0.02	0.26	0.02	0.39	0.05	0.01		1.43	2	7 %
Stockholm, Södermalm	08.04.2009	10.06.2009	63	23	0.18	0.67	0.34	0.02	0.31	0.05	0.27	0.06	0.00		1.47	2	8 %
Stockholm, Södermalm	10.06.2009	12.08.2009	63	17	0.28	0.84	0.44	0.02	0.33	0.06	0.39	0.07	0.00	Stop date 091012, assumed 090812.	1.37	2	14 %
Stockholm, Södermalm	12.08.2009	14.10.2009	63	22	1.10	0.72	0.50	0.01	0.39	0.10	0.79	0.07	0.00		1.21	4	17 %
Aspvreten	30.09.2008	01.12.2008	62	6	0.10	0.16	0.08	0.01	0.06	0.02	0.10	0.06	0.00		1.50	1	10 %
Aspvreten	01.12.2008	06.02.2009	67	2	0.03	0.05	0.06	0.01	0.03	<0.0	<0.1	<0.0	0.00		2.13	0	16 %
Aspvreten	06.02.2009	09.04.2009	62	2	<0.0	0.06	0.05	0.01	0.05	<0.0	<0.0	<0.0	0.00		2.03	0	13 %
Aspvreten	09.04.2009	15.06.2009	67	6	0.02	0.06	0.04	<0.0	0.03	<0.0	<0.0	0.08	0.01	Sampler container moist inside	2.78	0	5 %
Aspvreten	15.06.2009	17.08.2009	63	4	0.03	0.11	0.09	<0.0	0.08	<0.0	0.06	0.03	0.00		1.82	0	11 %
Aspvreten	17.08.2009	01.10.2009	45	9	0.03	0.09	0.19	<0.0	0.14	0.04	0.05	0.43	0.00		3.64	1	11 %
Lincoln Cathedral	29.10.2008	21.01.2009	84	12	1.28	0.40	0.98	0.05	0.49	0.09	0.85	0.04	0.03	Storage container moist inside	1.15	4	35 %
Lincoln Cathedral	21.01.2009	24.03.2009	62	20	2.01	0.96	1.42	0.04	0.77	0.15	1.49	0.08	0.00		1.18	7	35 %
Lincoln Cathedral	24.03.2009	01.05.2009	38	25	1.25	1.27	1.09	0.03	1.00	0.14	1.11	0.10	0.01		1.45	6	24 %

Lincoln Cathedral	01.05.2009	02.07.2009												Missing			
Lincoln Cathedral	02.07.2009	17.09.2009	77											Not exposed according to protocol		0	
Lincoln Cathedral	17.09.2009	30.11.2009	74	29	3.98	0.56	1.90	0.02	1.02	0.26	2.33	0.16	0.03		1.12	10	35 %
Madrid	02.10.2008	02.12.2008	61	9	0.08	0.39	0.16	0.01	0.32	0.02	0.08	0.03	0.01		1.85	1	11 %
Madrid	02.12.2008	03.02.2009	63	18	0.99	0.37	1.04	0.16	0.55	0.06	0.71	0.05	0.02		1.32	4	22 %
Madrid	03.02.2009	31.03.2009	56	17	0.05	0.74	0.20	0.02	0.64	0.02	0.15	0.04	0.00		2.40	2	11 %
Madrid	31.03.2009	02.06.2009	63	17	0.03	0.37	0.13	0.02	0.45	0.02	0.05	0.05	0.00		3.02	1	7 %
Madrid	02.06.2009	30.07.2009	58	11	0.02	0.35	0.16	0.02	0.42	<0.0	0.08	0.07	0.00		3.04	1	10 %
Madrid	30.07.2009	01.10.2009	63	19	0.02	0.63	0.22	0.02	0.75	0.02	0.04	0.04	0.00		2.77	2	9 %
Toledo	01.10.2008	01.12.2008	61	13	0.05	0.35	0.21	0.01	0.33	0.02	0.07	0.03	0.00		1.98	1	8 %
Toledo	01.12.2008	04.02.2009	65	6	0.44	0.16	0.11	0.02	0.06	0.03	0.32	0.03	0.00		1.22	1	18 %
Toledo	04.02.2009	03.04.2009	58	9	<0.0	0.58	0.12	0.03	0.36	0.02	0.10	0.04	0.00		2.19	1	14 %
Toledo	03.04.2009	30.05.2009	57	12	0.02	0.22	0.08	0.01	0.18	<0.0	0.05	0.05	0.00		2.70	1	6 %
Toledo	30.05.2009	03.08.2009	65	5	0.07	0.08	0.04	0.01	0.10	<0.0	0.05	0.05	0.00		2.48	0	8 %
Toledo	03.08.2009	05.10.2009	63	6	<0.0	0.26	0.09	0.02	0.23	<0.0	0.06	<0.1	0.00		2.75	1	13 %
Lahemaa	09.10.2008	16.12.2008	68	7	0.12	0.33	0.35	0.02	0.18	0.01	0.10	0.10	0.00	Filter detached in one edge	1.15	1	17 %
Lahemaa	16.12.2008	11.02.2009	57	27	0.93	0.62	0.77	0.04	0.50	0.04	0.69	1.25	0.00		1.77	5	18 %
Lahemaa	11.02.2009	07.04.2009	55	5	0.04	0.28	0.23	0.02	0.19	<0.0	0.08	0.06	0.00		1.72	1	18 %

Lahemaa	07.04.2009	04.06.2009	58	14	0.21	0.15	0.09	0.01	0.16	0.02	0.14	0.14	0.01	Storage container moist inside	1.90	1	6 %
Lahemaa	04.06.2009	28.07.2009	54	12	0.03	0.16	0.21	<0.0	0.15	0.02	0.06	0.12	0.00		1.93	1	6 %
Lahemaa	28.07.2009	06.10.2009	70	7	0.10	0.18	0.12	<0.0	0.15	0.02	0.10	0.10	0.00		2.01	1	12 %
Paris	03.10.2008	01.12.2008															
Paris	01.12.2008	30.01.2009	60	13	1.15	0.39	0.79	0.05	0.47	0.08	0.75	0.04	0.01		1.20	4	28 %
Paris	30.01.2009	31.03.2009	60	29	2.18	0.99	1.80	0.10	1.52	0.51	1.42	0.31	0.02		1.67	9	31 %
Paris	31.03.2009	29.05.2009	59	22	0.31	1.17	0.68	0.02	1.01	0.05	0.29	0.07	0.00		1.68	4	17 %
Paris	29.05.2009	31.07.2009	63	15	0.35	0.74	0.37	0.01	0.77	0.04	0.31	0.05	0.02		1.95	3	17 %
Paris	31.07.2009	01.10.2009												not received		0	
Chaumont	02.10.2008	01.12.2008	60	3	0.03	0.11	0.07	<0.0	0.08	0.01	0.04	<0.0	0.00		1.86	0	15 %
Chaumont	01.12.2008	02.02.2009	63	3	0.03	0.09	0.07	0.01	0.06	0.01	<0.1	<0.0	0.00		2.01	0	10 %
Chaumont	02.02.2009	30.03.2009	56	2	<0.0	0.06	0.06	<0.0	0.06	<0.0	<0.1	<0.0	0.00		2.27	0	14 %
Chaumont	30.03.2009	29.05.2009	60	31	0.08	0.52	0.53	0.10	0.37	0.07	0.12	0.31	0.03		1.99	2	7 %
Chaumont	29.05.2009	30.07.2009	62	13	0.03	0.23	0.10	0.01	0.19	0.02	0.04	0.05	0.00		2.26	1	5 %
Chaumont	30.07.2009	01.10.2009	63	9	<0.0	0.54	0.16	0.02	0.39	<0.0	0.05	0.04	0.00		2.01	1	14 %
Katowice	07.10.2008	08.12.2008	62	21	0.33	0.42	1.55	0.03	0.92	0.05	0.16	0.05	0.01	Filter detached	1.25	4	17 %
Katowice	08.12.2008	10.02.2009	64	28	2.38	0.32	2.28	0.28	1.07	0.09	1.14	0.08	0.03		1.07	8	28 %
Katowice	10.02.2009	06.04.2009	55	27	0.79	0.71	1.51	0.07	1.00	0.09	0.46	0.13	0.11		1.30	5	18 %
Katowice	06.04.2009	03.06.2009	58	38	0.22	0.81	0.98	0.04	0.90	0.07	0.16	0.18	0.01		1.63	3	9 %
Katowice	03.06.2009	05.08.2009	63	17	0.07	0.31	0.43	0.01	0.34	0.04	0.07	0.07	0.00		1.63	1	8 %
Katowice	05.08.2009	15.10.2009	71	22	0.16	0.53	0.65	0.02	0.49	0.06	0.07	0.07	0.00	Hair on the filter	1.33	2	9 %

Athens	01.10.2008	01.12.2008	61	109	11.84	2.91	8.27	0.28	5.79	0.79	7.21	0.50	0.06	Filter knobby on the sampler	1.26	38	34 %
Athens	02.12.2008	02.02.2009	62	144	25.76	2.34	16.62	0.72	8.24	1.82	15.10	0.71	0.09		1.15	71	50 %
Athens	02.02.2009	01.04.2009	58	156	16.29	2.64	12.47	0.09	6.74	1.14	9.49	0.45	0.09		1.13	49	32 %
Athens	01.04.2009	01.06.2009	61	52	0.66	4.40	1.26	0.08	2.24	0.15	0.97	0.16	0.03		1.51	10	19 %
Athens	01.06.2009	31.07.2009	60	56	0.90	5.18	1.21	0.06	2.15	0.22	1.54	0.15	0.04		1.49	11	20 %
Athens	31.07.2009	01.10.2009	62	50	2.53	3.97	1.57	0.06	2.08	0.26	1.93	0.15	0.03		1.29	13	25 %
Riga	11.11.2008	20.01.2009	70	34	2.53	0.39	0.77	0.07	0.59	0.09	1.89	0.05	0.08	O-ring placed over the filter	1.33	6	19 %
Riga	20.01.2009	20.03.2009	59	24	0.87	0.35	0.72	0.03	0.52	0.10	0.70	0.04	0.02		1.50	3	14 %
Riga	20.03.2009	22.05.2009	63	40	0.30	0.89	0.59	0.02	0.96	0.09	0.28	0.26	0.03	O-rings placed over the filter	2.14	3	8 %
Riga	22.05.2009	21.07.2009	60	36	0.09	0.42	0.32	0.02	0.61	0.07	0.09	0.08	0.03		2.70	2	5 %
Riga	21.07.2009	17.09.2009	58	29	0.26	0.94	0.59	0.02	0.84	0.10	0.20	0.11	0.04		1.82	3	11 %
Riga	17.09.2009	13.11.2009	57	20	0.39	0.23	0.35	0.01	0.43	0.05	0.24	0.16	0.06		1.85	2	9 %
Vienna	10.10.2008	05.12.2008	56	12	0.39	0.54	0.43	0.02	0.41	0.04	0.34	0.04	0.00		1.42	2	18 %
Vienna	05.12.2008	06.02.2009	63	7	0.36	0.57	0.55	0.06	0.32	0.03	0.38	0.03	0.00		1.25	2	31 %
Vienna	06.02.2009	09.04.2009	62	9	0.07	0.46	0.15	0.03	0.24	0.02	0.12	<0.1	0.00		1.75	1	13 %
Vienna	09.04.2009	09.06.2009	61	16	0.03	0.51	0.23	0.03	0.44	0.04	0.04	0.06	0.01		2.15	1	9 %
Vienna	09.06.2009	11.08.2009	63	8	0.02	0.12	0.07	0.01	0.15	<0.0	<0.1	<0.0	0.00		3.22	0	6 %
Vienna	11.08.2009	12.10.2009	62	8	0.05	0.43	0.15	0.03	0.26	0.02	0.05	<0.1	0.00		1.78	1	13 %

Table C.2: Gas measurements with IVL passive samplers sheltered from rain. Tri-and bi-monthly samples (µg/m^3)

No	Station	Start time	End time	days	Temp °C	HNO_3 µg/m^3 STP	SO_2 µg/m^3 STP	NO_2 µg/m^3 STP	O_3 µg/m^3 STP	Note
1	Prague	23.10.2008 12:00	12.02.2009 12:00	112	3.0	0.35				
1	Prague	12.02.2009 12:00	12.05.2009 12:00	89	5.0	0.80				
1	Prague	12.05.2009 12:00	04.08.2009 12:00	84	20.0	1.29				
1	Prague	04.08.2009 12:00	20.10.2009 12:00	77	15.0	1.02				
3	Kopisty	24.10.2008 12:00	18.02.2009 12:00	117		0.32				Lid on storage container broken.
3	Kopisty	18.02.2009 12:00	06.05.2009 12:00	77	5.3	0.65				
3	Kopisty	06.05.2009 12:00	06.08.2009 12:00	92	15.7	0.62				
3	Kopisty	06.08.2009 12:00	20.10.2009 12:00	75	15.5	0.71				
10	Bottrop	07.10.2008 20:00	01.12.2008 07:00	54	8.5	0.23				
10	Bottrop	01.12.2008 07:00	10.02.2009 19:00	72	3.0	0.17				
10	Bottrop	10.02.2009 19:00	31.03.2009 06:30	48	2.0	0.20				
10	Bottrop	31.03.2009 06:30	01.06.2009 14:30	62	13.5	0.76				
10	Bottrop	01.06.2009 14:30	31.07.2009 09:00	60	20.5	0.89				
10	Bottrop	31.07.2009 09:00	07.10.2009 17:30	68	22.0	0.63				Membrane broken by a bird.
13	Rome	29.10.2008 12:00	24.12.2008 10:00	56	14.0	0.13				
13	Rome	24.12.2008 10:00	03.02.2009 12:05	41	8.5	0.32				
13	Rome	03.02.2009 12:10	28.04.2009 10:00	84	15.0	0.21				
13	Rome	28.04.2009 10:00	26.06.2009 10:30	59	20.6	0.97				
13	Rome	30.06.2009 09:30	27.08.2009 10:30	58	30.0	1.83				Start 4 days later than previous stop.
13	Rome	27.08.2009 10:30	04.11.2009 09:30	69	24.0	0.86				

14	Casaccia	17.10.2008 14:00	17.12.2008 18:30	61	14.0	0.27				
14	Casaccia	18.12.2008 10:00	24.02.2009 12:00	68	8.5	0.36				
14	Casaccia	24.02.2009 12:00	27.04.2009 10:15	62	15.0	0.38				
14	Casaccia	27.04.2009 10:15	30.06.2009 09:30	64	20.3	1.20				
14	Casaccia	30.06.2009 09:30	26.08.2009 11:00	57	30.0	1.78				Start 2009-06-26 according to protocol.
14	Casaccia	26.08.2009 11:00	02.11.2009 10:45	68	24.0	0.59				
15	Milan	21.10.2008 12:00	17.12.2008 10:40	57	6.0	0.28				
15	Milan	17.12.2008 10:40	19.02.2009 14:15	64	1.5	0.32				
15	Milan	19.02.2009 14:15	21.04.2009 09:45	61	13.0	0.57				
15	Milan	21.04.2009 09:45	22.06.2009 14:40	62	24.0	2.52				
15	Milan	22.06.2009 14:40	21.08.2009 11:00	60	28.5	4.21				
15	Milan	21.08.2009 11:00	29.10.2009 10:30	69	21.0	1.80				
16	Venice	23.10.2008 10:00	23.12.2008 11:30	61	9.5	0.18				
16	Venice	23.12.2008 11:30	26.02.2009 11:30	65	3.0	0.26				
16	Venice	26.02.2009 11:30	22.04.2009 09:30	55	12.0	0.68				
16	Venice	22.04.2009 11:00	26.06.2009 14:00	65	23.0	2.03				
16	Venice	26.06.2009 14:00	27.08.2009 15:50	62	27.5	3.83				
16	Venice	27.08.2009 15:50	27.10.2009 11:00	61	21.0	1.05				
41	Berlin	14.10.2008 14:20	17.12.2008 11:10	64	7.5	0.15				Dirty membrane with a tiny hole.
41	Berlin	17.12.2008 11:10	16.02.2009 09:30	61	1.0	0.12				
41	Berlin	16.02.2009 09:30	15.04.2009 15:00	58	15.0	0.27				
41	Berlin	15.04.2009 15:00	15.06.2009 09:30	61	19.0	0.52				
41	Berlin	15.06.2009 09:30	24.08.2009 15:00	70	26.0	0.60				
41	Berlin	24.08.2009 15:00	22.10.2009 11:30	59	16.5	0.52				

21	Oslo	07.10.2008 13:00	02.12.2008 13:00	56	6.0	0.04			18.5	
21	Oslo	02.12.2008 13:00	02.02.2009 13:00	62	6.0	0.17			16.8	
21	Oslo	02.02.2009 13:00	01.04.2009 13:45	58	7.5	0.22			28.5	
21	Oslo	01.04.2009 13:45	02.06.2009 14:00	62	8.5	0.31			53.4	
21	Oslo	02.06.2009 14:00	03.08.2009 14:00	62	15.0	0.21			51.8	
21	Oslo	03.08.2009 14:00	05.10.2009 13:00	63	13.0	0.16			29.2	Membrane not attached to sampler.
23	Birkenes	08.10.2008 13:00	01.12.2008 07:00	54	10.0	0.03				Filter moist
23	Birkenes	01.12.2008 07:00	01.02.2009 07:00	62	4.3	0.10				
23	Birkenes	01.02.2009 07:00	01.04.2009 06:00	59	7.5	0.21				
23	Birkenes	01.04.2009 06:00	01.06.2009 06:00	61	8.5	0.22				
23	Birkenes	01.06.2009 06:00	01.08.2009 16:00	61	9.4	0.13				
23	Birkenes	01.08.2009 16:00	06.10.2009	65						
44	Svanvik	14.10.2008 14:00	01.12.2008 12:20	48	4.0	0.03			39.6	
44	Svanvik	01.12.2008 12:20	01.02.2009 16:55	62	1.0	0.14			50.8	
44	Svanvik	01.02.2009 17:00	01.04.2009 16:15	59	7.5	0.11			52.8	
44	Svanvik	01.04.2009 16:15	02.06.2009 12:20	62	8.5	0.08			69.7	
44	Svanvik	02.06.2009 12:25	01.08.2009 21:30	60	15.0	0.03			40.0	
44	Svanvik	01.08.2009 21:30	06.10.2009 12:00	66	13.0	0.00			36.8	Membrane pressed in.
24	Stockholm, Södermalm	02.10.2008 11:00	05.12.2008 10:00	64	5.1	0.14	0.54	11.62	36.0	
24	Stockholm, Södermalm	05.12.2008 10:00	03.02.2009 10:30	60	-2.8	0.39	1.40	15.33	35.4	
24	Stockholm, Södermalm	03.02.2009 10:30	08.04.2009 10:00	64	0.1	0.19	1.06	11.58	58.0	
24	Stockholm, Södermalm	08.04.2009 10:00	10.06.2009 10:30	63	10.7	0.35	0.82	8.77	76.4	

24	Stockholm, Södermalm	10.06.2009 10:30	12.08.2009 10:00	63	17.2	0.59	0.62	8.65	62.7	stop time on protocol 20091012, assumed 20090812.
24	Stockholm, Södermalm	12.08.2009 10:00	14.10.2009 10:30	63	11.9	0.28	0.59	9.62	49.8	
26	Aspvreten	30.09.2008 12:00	01.12.2008 13:00	62	7.5	0.07	0.37	2.34	32.6	
26	Aspvreten	01.12.2008 13:00	06.02.2009 13:00	67	-2.8	0.11	0.46	2.55	30.8	
26	Aspvreten	06.02.2009 13:00	09.04.2009 14:00	62	0.1	0.08	0.41	1.82	48.9	
26	Aspvreten	09.04.2009 14:00	15.06.2009 11:00	67	10.7	0.13	0.33	1.38	61.8	
26	Aspvreten	15.06.2009 11:00	17.08.2009 11:00	63	17.2	0.03	0.25	0.97	43.7	
26	Aspvreten	17.08.2009 11:00	01.10.2009 10:30	45	11.9	0.05	0.27	1.41	40.0	
27	Lincoln Cathedral	29.10.2008 16:00	21.01.2009 11:50	84	6.0	0.14	3.44	21.03	30.5	
27	Lincoln Cathedral	21.01.2009 12:05	24.03.2009 15:05	62	4.0	0.29	2.18	16.79	41.2	
27	Lincoln Cathedral	24.03.2009 15:10	01.05.2009 14:40	38	13.0	0.47	1.21	11.75	67.6	HNO_3:Shorter exposure, according to protocol
27	Lincoln Cathedral	01.05.2009 14:50	02.07.2009 11:05	62	21.5	0.32	1.40	5.46	66.1	
27	Lincoln Cathedral	02.07.2009 11:05	17.09.2009 11:55	77	28.0	0.32	0.89	8.49	42.9	
27	Lincoln Cathedral	17.09.2009 11:55	30.11.2009 12:15	74	9.0	0.20	1.7	19.0	34	
31	Madrid	02.10.2008 12:00	02.12.2008 12:00	61	10.1	0.38				
31	Madrid	02.12.2008 12:00	03.02.2009 12:00	63	5.0	0.26				
31	Madrid	03.02.2009 12:00	31.03.2009 12:00	56	16.0	0.59				
31	Madrid	31.03.2009 12:00	02.06.2009 12:00	63	20.5	0.71				
31	Madrid	02.06.2009 12:00	30.07.2009 12:00	58	30.0	1.39				
31	Madrid	30.07.2009 12:00	01.10.2009 12:00	63	30.0	1.67				
31	Toledo	01.10.2008 12:00	01.12.2008 12:00	61	10.1	0.26				
31	Toledo	01.12.2008 12:00	04.02.2009 12:00	65	5.0	0.20				
31	Toledo	04.02.2009 12:00	03.04.2009 12:00	58	20.0	0.55				

33	Toledo	03.04.2009 12:00	30.05.2009 12:00	57	11.8	0.50				
33	Toledo	30.05.2009 12:00	03.08.2009 12:00	65	30.0	0.67				
33	Toledo	03.08.2009 12:00	05.10.2009 12:00	63	21.5	0.88				
35	Lahemaa	09.10.2008 12:00	16.12.2008 10:00	68	-4.0	0.25				
35	Lahemaa	16.12.2008 10:00	11.02.2009 12:30	57	-4.0	0.27				
35	Lahemaa	11.02.2009 12:30	07.04.2009 09:30	55	2.0	0.45				
35	Lahemaa	07.04.2009 09:30	04.06.2009 11:30	58	6.0	0.32				
35	Lahemaa	04.06.2009 11:30	28.07.2009 13:10	54	21.0	0.14				
35	Lahemaa	28.07.2009 13:10	06.10.2009 11:00	70	9.0	0.11				
40	Paris	03.10.2008 15:50	01.12.2008 16:10	59	8.0	0.21				Dirty membrane
40	Paris	01.12.2008 16:14	30.01.2009 10:18	60	-2.0	0.29				Storage containers lid not closed, bag open
40	Paris	30.01.2009 10:18	31.03.2009 15:30	60	7.0	0.28				
40	Paris	31.03.2009 15:30	29.05.2009 09:50	59	13.0	0.67				
40	Paris	29.05.2009 09:55	31.07.2009 10:49	63	21.0	3.21				Spider web on sampler according to protocol.
40	Paris	31.07.2009 10:49	01.10.2009 11:01	62	22.5	1.14				
45	Chaumont	02.10.2008 12:00	01.12.2008 10:30	60		0.25				
45	Chaumont	01.12.2008 10:30	02.02.2009 10:30	63	-2.0	0.89				
45	Chaumont	02.02.2009 10:30	30.03.2009 10:30	56	5.0	0.29				
45	Chaumont	30.03.2009 10:30	29.05.2009 10:30	60		0.39				
45	Chaumont	29.05.2009 10:30	30.07.2009 10:00	62	17.0	0.42				
45	Chaumont	30.07.2009 10:00	01.10.2009 10:00	63		0.41				
50	Katowice	04.10.2008 13:30	08.12.2008 14:00	65	8.0	0.38				
50	Katowice	08.12.2008 14:00	10.02.2009 12:00	64	3.0	0.75				No stop time.
50	Katowice	10.02.2009 11:00	06.04.2009 11:30	55	15.0	0.66				

50	Katowice	06.04.2009 11:30	03.06.2009 13:30	58	17.0	0.80				
50	Katowice	03.06.2009 13:30	05.08.2009 08:30	63	22.0	1.17				
50	Katowice	05.08.2009 09:30	15.10.2009 10:00	71	28.5	0.64				
51	Athens	01.10.2008 11:50	01.12.2008 09:07	61	15.9	0.38				Dirty membrane
51	Athens	01.12.2008 09:08	02.02.2009 08:55	63	10.5	0.28				
51	Athens	02.02.2009 08:56	01.04.2009 08:49	58	9.7	0.32				
51	Athens	01.04.2009 08:51	01.06.2009 09:01	61	17.6	1.35				
51	Athens	01.06.2009 09:02	31.07.2009 08:50	60	26.4	3.64				
51	Athens	31.07.2009 08:51	01.10.2009 08:59	62	27.1	1.62				
52	Riga	11.11.2008 12:30	20.01.2009 09:40	70	1.5	0.19				
52	Riga	20.01.2009 09:45	20.03.2009 09:40	59	-2.3		3.17	41.40	63.6	
52	Riga	20.03.2009 10:00	22.05.2009 10:05	63	3.3	0.43	1.58	15.67	63.8	
52	Riga	22.05.2009 10:05	21.07.2009 09:13	60	12.7	0.49	0.78	12.08	57.0	
52	Riga	21.07.2009 09:15	17.09.2009 10:50	58	16.0	0.46	0.74	19.73	39.2	
52	Riga	17.09.2009 10:50	13.11.2009 09:45	57	9.0	0.20	0.50	18.59	26.8	
53	Vienna	10.10.2008 09:00	05.12.2008 09:00	56	7.8	0.16				Sampler has fallen to the ground according to protocol
53	Vienna	05.12.2008 09:00	06.02.2009 11:00	63	-1.0	0.62				
53	Vienna	06.02.2009 11:00	09.04.2009 15:00	62	5.0	0.76				
53	Vienna	09.04.2009 11:00	09.06.2009 15:00	61	12.5	1.03				
53	Vienna	09.06.2009 15:00	11.08.2009 15:00	63	19.0	1.26				
53	Vienna	11.08.2009 15:00	12.10.2009 14:00	62	17.0	1.30				

Appendix D

Yearly average values for particle deposition (pr. month) and for HNO_3, SO_2, NO_2, O_3 (pr. year) measured with IVL samplers for the exposure period

Table D.1: Yearly average particle deposition (pr month - sheltered from rain)

No	station	start	stop	days	mass	Cl^-	NO_3^-	SO_4^{2-}	NH_4^+	Ca^{2+}	Mg^{2+}	Na^+	K^+	$\ln(R_0/R)$	ionb.	water soluble	water soluble	HNO_3	SO_2	NO_2	O_3
					µg cm^{-2} $month^{-1}$									$month^{-1}$	+/-	µg cm^{-2} $month^{-1}$	%	µg/m^3	µg/m^3	µg/m^3	µg/m^3
1	Prague	23.10.2008	20.10.2009	363	7.16	0.08	0.22	0.24	0.03	0.18	0.01	0.09	0.03	0.00	1.46	0.9	12 %	0.82			
3	Kopisty	24.10.2008	20.10.2009	362	13.68	0.16	0.68	0.91	0.20	0.25	0.03	0.23	0.07	0.01	1.09	2.5	18 %	0.55			
10	Bottrop	07.10.2008	07.10.2009	365	15.42	0.24	0.40	0.73	0.06	0.36	0.05	0.24	0.07	0.01	1.30	2.1	14 %	0.49			
13	Rome	29.10.2008	04.11.2009	371	41.38	5.32	1.58	1.49	0.04	1.13	0.37	3.32	0.21	0.02	1.16	13.5	33 %	0.71			
14	Casaccia	17.10.2008	02.11.2009	381	36.41	1.51	1.22	0.54	0.03	0.54	0.14	1.11	0.20	0.00	1.24	5.3	14 %	0.74			
15	Milan	21.10.2008	29.10.2009	373	50.30	0.34	3.31	0.89	0.11	1.47	0.09	0.42	0.28	0.03	1.36	6.9	14 %	1.62			
16	Venice	23.10.2008	27.10.2009	369	15.85	0.33	1.14	0.62	0.03	0.60	0.08	0.43	0.17	0.01	1.48	3.4	21 %	1.35			
21	Oslo	07.10.2008	05.10.2009	363	16.68	0.81	0.39	0.42	0.04	0.27	0.05	0.61	0.09	0.02	1.29	2.7	16 %	0.19			33
23	Birkenes	08.10.2008	06.10.2009	363	5.40	0.36	0.19	0.16	0.02	0.10	0.03	0.30	0.04	0.00	1.38	1.2	22 %	0.14			
24	Stockholm, Södermalm	02.10.2008	14.10.2009	377	22.08	0.73	0.64	0.52	0.03	0.33	0.06	0.63	0.06	0.01	1.24	3.0	14 %	0.32	0.8	10.9	53
26	Aspvreten	30.09.2008	01.10.2009	366	4.45	0.04	0.09	0.08	0.01	0.06	0.01	0.06	0.09	0.01	2.24	0.4	10 %	0.08	0.4	1.8	43
27	Lincoln Cathedral	29.10.2008	30.11.2009	397	20.52	2.23	0.71	1.37	0.03	0.79	0.16	1.47	0.09	0.02	1.17	6.8	33 %	0.27	1.9	14.2	44
31	Madrid	02.10.2008	01.10.2009	364	15.13	0.21	0.47	0.32	0.04	0.52	0.03	0.19	0.05	0.02	1.98	1.8	12 %	0.83			
33	Toledo	01.10.2008	05.10.2009	369	8.39	0.11	0.27	0.11	0.02	0.21	0.02	0.11	0.04	0.00	1.98	0.9	11 %	0.51			
35	Lahemaa	09.10.2008	06.10.2009	362	11.67	0.23	0.29	0.29	0.02	0.22	0.02	0.19	0.29	0.01	1.70	1.5	13 %	0.25			
40	Paris	03.10.2008	01.10.2009	363	19.74	0.99	0.82	0.90	0.04	0.94	0.17	0.69	0.12	0.02	1.60	4.7	24 %	0.99			
41	Berlin	14.10.2008	22.10.2009	373	40.19	5.48	0.50	1.36	0.17	0.91	0.03	3.70	0.08	0.07	1.15	12.2	30 %	0.37			
44	Svanvik	14.10.2008	06.10.2009	357	5.29	0.22	0.08	0.19	0.02	0.09	0.03	0.17	0.07	0.00	1.52	0.9	16 %	0.08			49
45	Chaumont	02.10.2008	01.10.2009	364	10.26	0.04	0.26	0.17	0.03	0.19	0.02	0.06	0.08	0.02	2.04	0.9	8 %	0.45			
50	Katowice	07.10.2008	15.10.2009	373	25.11	0.65	0.51	1.22	0.07	0.78	0.06	0.34	0.09	0.04	1.26	3.7	15 %	0.73			
51	Athens	01.10.2008	01.10.2009	365	94.26	9.66	3.57	6.88	0.22	4.53	0.73	6.04	0.35	0.06	1.20	32.0	34 %	1.26			
52	Riga	11.11.2008	13.11.2009	367	30.84	0.79	0.54	0.56	0.03	0.66	0.08	0.61	0.11	0.05	1.66	3.4	11 %	0.35	1.4	21.4	50
53	Vienna	10.10.2008	12.10.2009	367	9.90	0.15	0.44	0.26	0.03	0.30	0.03	0.16	0.04	0.01	1.62	1.4	14 %	0.87			

Table D.2: Yearly average particle deposition loss of reflectance (pr month - sheltered from rain and wind)

No	station	start	stop	days	mass	ln(R0/R)	note
					µg cm-2 month-1	month-1	
1	Prague	23.10.2008	22.10.2009	364	12	0.01	
3	Kopisty	24.10.2008	20.10.2009	361	4	0.00	
10	Bottrop	07.10.2008	07.10.2009	365	3	0.00	
13	Rome	29.10.2008	04.11.2009	371	3	0.00	
14	Casaccia	17.10.2008	02.11.2009	381	2	0.00	
15	Milan	21.10.2008	29.10.2009	373	3	0.00	
16	Venice	23.10.2008	27.10.2009	369	10	0.01	
21	Oslo	07.10.2008	05.10.2009	363	1	0.00	
23	Birkenes	08.10.2008	06.10.2009	363	2	0.00	Filter detached from the sampler.
24	Stockholm	02.10.2008	14.10.2009	377	3	0.00	
26	Aspvreten	30.09.2008	01.10.2009	366	1	0.00	
27	Lincoln Cathedral	29.10.2008	30.11.2009	397	4	0.00	
31	Madrid	02.10.2008	01.10.2009	364	3	0.00	
33	Toledo	01.10.2008	05.10.2009	369	2	0.00	
35	Lahemaa	09.10.2008	06.10.2009	362	2	0.00	
40	Paris						
41	Berlin	14.10.2008	22.10.2009	373	10	0.00	
44	Svanvik	14.10.2008	08.10.2009	359	1	0.00	
45	Chaumont	02.10.2008	01.10.2009	364	1	0.00	
50	Katowice	07.10.2008	15.10.2009	373	9	0.01	
51	Athens	01.10.2008	01.10.2009	365	10	0.00	
52	Riga	11.11.2008	13.11.2009	367	10	0.01	
53	Vienna	10.10.2008	12.10.2009	367	2	0.00	

Appendix E

Data availability

Table E.1: Data availability i % for 13 months – October 2008 – October 2009. 92 % represents full coverage for 12 months.

Station no	Mandatory											Optional	
	Climate		Gases (concentration)				Precipitation					Prec.	Particles
	Temp	RH	SO_2	NO_2	O_3	HNO_3	Amount	H^+	SO_4^{2-}	NO_3^-	Cl^-	Cond.	PM_{10} (Conc)
	availability (%)												
01	100	100	100	100	92	A	100	100	100	100	100	100	92
03	100	100	100	100	100	A	100	100	100	100	100	100	92
10	93	93	90	81	90	A	100	100	100	100	100	100	95
13	A	A	0	83	83	A	A	A	A	A	A	A	0
14	100	100	100	100	100	A	100	A	A	A	A	A	0
15	96	96	85	94	96	A	97	A	A	A	A	A	0
16	100	100	100	94	100	A	100	A	A	A	A	A	0
21	100	100	85	85	A	A	92	92	92	92	92	92	0
23	99	94	97	98	97	95	100	99	100	100	100	99	83
24	92	92	A	A	A	A	92	85	85	85	85	0	0
26	A	A	A	A	A	A	A	92	92	92	92	0	0
27	A	A	A	A	A	A	0	0	0	0	0	0	0
31	92	92	91	90	89	A	92	85	77	77	77	85	66
33	91	91	92	92	92	A	92	87	75	74	74	86	87
35	96	96	94	96	97	A	40	31	40	40	40	31	100
40	100	100	90	90	90	A	100	100	100	100	100	100	95
41	100	100	97	98	97	A	A	0	28	28	28	0	98
44	100	100	99	92	A	A	100	96	97	97	97	96	0
45	92	92	89	90	90	A	92	91	89	89	89	91	92
50	100	100	100	100	100	A	A	0	0	0	0	0	86
51	99	100	100	93	99	A	100	0	0	0	0	0	95
52	100	100	96	98	92	A	100	A	A	A	A	A	A
53	A	A	99	99	98	A	A	0	0	0	0	0	100
54	92	92	88	88	86	0.00	92	92	92	92	0	0	87

A = available. The % availability was not reported, or IVL data.

Appendix F

National contact centres

Member	Role
Mrs Katerina Kreislova SVUOM Ltd. U Mestanského Pivovaru 934 /4 CZ-17000 PRAHA 7 Czech Republic +420 2 20 80 9996 kreislova@svuom.cz	Sub-centre (steel) Test site 1 Test site 3
Mr Stefan Brüggerhoff Fachbereich Denkmalschutz und Materialkunde Deutsches Bergbau – Museum Bochum Herner Straße 45, 44787 Bochum Germany +49 234 968 4032/4031 stefan.brueggerhoff@bergbaumuseum.de	Test site 10
Mr Stefan Doytchinov ENEA, Environmental Department Via Angvillarese, 301 00123 – Rome CR Casaccia Italy +39 06 3048 3972 doytchinov@casaccia.enea.it Send also information to Mr Augusto Screpanti screpanti@casaccia.enea.it	Co-chair Sub-centre (cultural heritage) Test site 13 Test site 14 Test site 15 Test site 16
Mr Terje Grøntoft NILU - Norwegian Institute for Air Research P.O.Box 100, N-2027 Kjeller Norway +47 63 898 023 teg@nilu.no	Sub-centre (environment) Test site 21 Test site 23 Test site 44
Mr Johan Tidblad Swerea KIMAB AB P. O. Box 55970 SE – 10216 Stockholm Sweden +46 8 674 1733 johan.tidblad@swerea.se	Co-chair Main research centre Test site 24 Test site 26

Member	Role
Mr Tim Yates Building Research Establishment Ltd., BRE Bucknalls Lane, Watford WD25 9XX United Kingdom +44 (0)1923 664 341 yatest@bre.co.uk	Sub-centre (limestone) Test site 27
Mr Daniel de la Fuente CENIM – National Centre for Metallurgical Research Avda Gregorio del Amo 8 28040 Madrid Spain +34 91 553 8900 delafuente@cenim.csic.es Send also information to Mr Jesus Manuel Vega jm.vega@cenim.csic.es	Test site 31 Test site 33
Mr Ott Roots Estonian Environmental Research Centre Marja Str. 4D 10617 Tallinn Estonia +372 611 2964 ott.roots@klab.ee	Test site 35
Mrs Tiziana Lombardo LISA - Université Paris 12 - CNRS Avenue du Général de Gaulle 61 F-94010 Creteil France +33 1 4517 1677 tiziana.lombardo@lisa.univ-paris12.fr	Sub-centre (modern glass) Test site 40

Member	Role
Mr Stefan Simon Rathgen Forschungslabor – Staatliche Museen zu Berlin Schloßstraße 1a, 14059 Berlin Germany +49 30 3267 490 s.simon@smb.spk-berlin.de Send also information to Mrs Sabine Schwerdtfeger s.schwerdtfeger@smb.spk-berlin.de	Test site 41
Mr Markus Faller EMPA - Corrosion and Materials Integrity Ueberlandstrasse 129 CH-8600 Dübendorf Switzerland +41 44 823 4236 markus.faller@empa.ch	Sub-centre (zinc) Test site 45
Mr Lech Kwiatkowski Institute of Precision Mechanics Duchnicka 3 01-796 Warsaw Poland +48 22 5602 846 lech@imp.edu.pl	Test site 50
Mr Costas Varotsos University of Athens, Faculty of Physics, Dept. of Applied Physics, Laboratory of Upper Air. UoAthens Climate Research Group. University Campus, Bldg Phys 5. 15784 Athens,GR +210-7276838 covar@phys.uoa.gr covar@atmos.umd.edu Send also information to Mr Chris Tzanis chtzanis@phys.uoa.gr chtzanis@yahoo.com	Test site 51

Member	Role
Mrs Linda Krage Riga Technical University Faculty of Materials Science and Applied Chemistry Department of Silicate Material Technology Azenes Str. 14/24 Riga LV-1048 Latvia +371 6432 537 linda@ktf.rtu.lv Send also information to Mrs Liva Dzene liva.dzene@gmail.com	Test site 52
Mr Manfred Schreiner Institute of Science and Technology in Art Academy of Fine Arts Schillerplatz 3 A-1010 Vienna Austria +43-1 58816-8600 m.schreiner@akbild.ac.at Send also information to Mr Melcher Michael m.melcher@akbild.ac.at	Test site 53
Mr Ivan Grancharov University of Chem. Technology and Metallurgy Bul. Kl. Ohridski 8, Sofia 1756 Bulgaria +359-2-8163249 ivan.gr@uctm.edu	Test site 54

Norwegian Institute for Air Research
P.O. Box 100, N-2027 Kjeller, Norway
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REPORT PREPARED FOR
Klima- og forurensningdirektoratet
P.O.Box 8100 Dep
0030 OSLO

ABSTRACT
This report presents the ICP Materials database for the period October 2008-December 2009. It includes environmental data from the ICP Materials trend exposure programme for 2008 - 2009. The database consists of meteorological data, and pollution data as gasses and in precipitation. Also reported are HNO3 and amount and composition in particle deposition in soiling.

NORWEGIAN TITLE

Det internasjonale samarbeidsprogrammet for materialer og bygd kulturarv. Trendeksponeringsprogrammet 2008 – 2009. Miljødata-rapport. Oktober 2008 til Desember 2009.

KEYWORDS		
Air quality	Environmental exposure	Material decompositon

ABSTRACT (in Norwegian)
Denne rapporten presenterer databasen i ICP Materialer for perioden Oktober 2009 – Desember 2009. Den inkluderer miljødata fra ICP Materialer trend-eksponeringsprogrammet for 2008 – 2009. Databasen består av meteorologiske data, og forurensningsdata som gasser og i partikler. HNO3 og mengde og sammensetning av partikkelavseting ved tilsmussing rapporteres også.

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