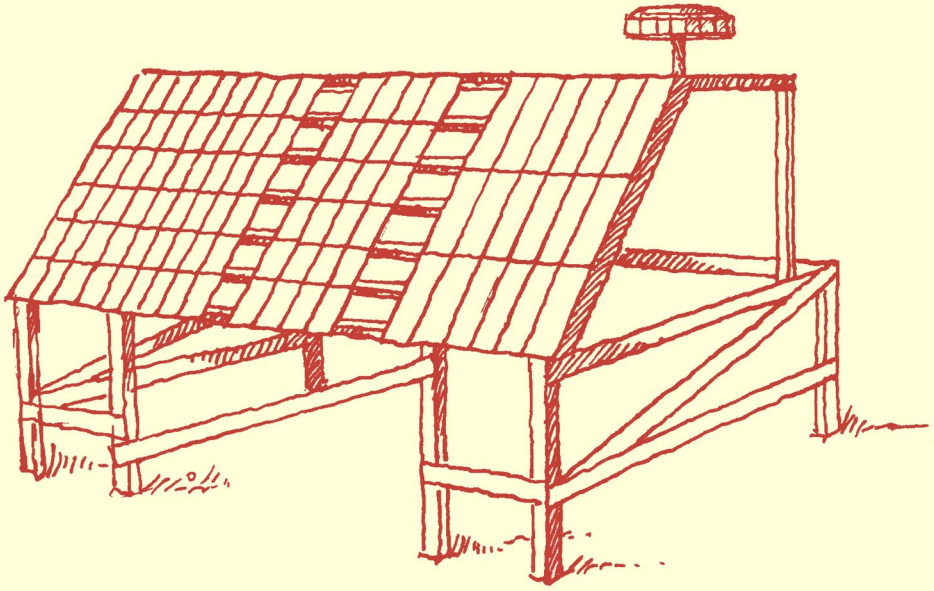
CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

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



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ABSTRACT

This report presents the ICP Materials database for the period October 2020 to December 2021. It includes environmental data from the ICP Materials trend exposure programme for 2020 - 2021 and, in addition, data for temperature, relative humidity, and precipitation amount back to the end of the previous annual exposure programme in October/November 2018. The database consists of meteorological data (T, RH and precipitation amount) and pollution data: Gas concentrations, amounts of ions in precipitation, particle concentrations and amounts of particle deposition.

NORWEGIAN TITLE

Konvensjonen om langtransporterte luftforurensinger. UN/ECE internasjonale samarbeidsprogram for materialer og bygd kulturarv. Trendeksponeringsprogrammet 2020 – 2021. Miljødata-rapport. Oktober 2020 til Desember 2021.

KEYWORDS

Air quality | Environmental exposure | Material decomposition

ABSTRACT (in Norwegian)

Denne rapporten presenterer databasen i ICP Materialer for perioden oktober 2020 – desember 2021. Den inkluderer miljødata fra ICP Materialer trend-eksponeringsprogrammet for 2020 – 2021 og, i tillegg, data for temperatur, relativ fuktighet og nedbørsmengde tilbake til slutten av forrige årlige eksponeringsperiode i oktober/november 2018. Databasen består av meteorologiske data (T, RF og nedbørsmengde) og forurensningsdata: Gasskonsentrasjoner, mengde ioner i nedbør, partikkelkonsentrasjoner og mengde avsatte partikler.

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

Trend exposure programme 2020 – 2021

Environmental data report
October 2020 to December 2021

Terje Grøntoft[1)] and Marta Segura Roux[2)]

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Summary

This report presents the environmental measurements of the UN/ECE ICP Materials trend exposure programme, 2020-2021, and, in addition, data of temperature, relative humidity, and precipitation amount back to the end of the previous annual exposure programme in October/November 2018. All the data collected from the participating test sites are reported here. Interpretation of the data related to effects on the corrosion of materials including cultural heritage, is presented in other ICP-reports. The UN/ECE international co-operative programme on effects on materials is an international project that measures and assesses the corrosivity of the atmosphere. The corrosion of exposed sample materials and the air pollutants and climate are measured at stations in Europe, and one in the USA at the present. Exposure studies have been ongoing in the programme since 1987, in different phases, with long time continuous exposures (1987-1995), a second phase from 1997 with a reduced and adjusted participation of test sites, exposures connected to EU framework projects (2002-2003), and, since 2005, with annual trend exposures and measurements of the environment every third year, and with some longer duration exposures of materials.

New sets of annual, four- and eight-yearly exposures of corrosion samples of carbon steel, weathering steel and limestone, and soiling samples of marble and limestone started at all the stations from 22nd September 2020 to 14th January 2021, with a few stations doing the mounting unusually early or late. Four-yearly and eight-yearly samples of more materials were mounted in 2017. The four-yearly samples were demounted in October or November 2021, whereas the eight-yearly samples will be demounted in October/November 2025.

The annual average values for the environmental parameters in this report were calculated from and including October (Bottrop DK, no 10) or November 2020 for most of the stations. At several stations the mounting and environmental reporting was delayed to December 2020 for the stations 13 (Rome IT), 14 (Casaccia IT), 41 (Berlin DE), 50 (Katowice PL), 59 (Zilina SK) and 61 (Zagreb HR), and to January 2021 for 15 (Milan IT) and 35 (Lahemaa EE).

The demounting dates were between October and December 2021 (Table B4). At New Haven (West Haven CT, US) the materials exposure lasted from October 2020 until February 2022, but the station has not reported environmental data. Monthly values for the temperature, relative humidity and precipitation amount back to the end of the previous annual reporting period of October/November 2018 are also included.

Monthly, several monthly (mainly two- to four-monthly), and annual average values for the period are reported in Appendix A and B. **Appendix A** gives the monthly data reported directly from the ICP Materials test sites, for the exposure period 2020/21, and for temperature (T), relative humidity (RH) and precipitation amount (Prec.) also for the exposure years 2018/19 and 2019/20. Appendix A also reports the several monthly (mainly two- to four-monthly) values for pollutant gases and for particle deposition, measured with IVL passive samplers and analysed at IVL-the Swedish Environmental Institute. **Appendix B** reports the annual average values for temperature (T), relative humidity (RH) and precipitation amount (Prec.) for the exposure years 2018/19, 2019/20 and for all the parameters for 2020/21. Appendix B also reports the start and end dates for the material exposures and months included in the

calculation of the annual averages of the environmental parameters. Appendix B also includes an erratum of meteorological annual values (T, RH, and precipitation amount) of the years 2015/16 and 2016/17 for two stations, that were reported in Grøntoft and Roux (2020). Appendix C and D give the original data from the IVL sampling, as reported by IVL. **Appendix C** gives the several-monthly (mainly two- to four-monthly) mean values for particle deposition on IVL samplers in a position sheltered from rain and for passive sampling of pollutant gases. **Appendix D** gives the annual average values for the particle deposition and pollutant gases measured by the IVL samplers for the exposure period. **Appendix E** gives the data availability in % for the sampling performed, and **Appendix F** the list of the data sources and acknowledgements for the data from the stations, reported to the data centre from 2014 to 2022. A complete list of participants and national contact centres, participating in the 2020–2021 trend exposure programme, is given in **Appendix G**.

A good database for dose-response evaluation should have data with a wide range of values for the most important parameters. The 2020-2021 environmental data[1] have a good spread in values of all included important pollutant gases, as well as for the most important meteorological parameters.

[1] The data in this report are stored by NILU in its database as the ICP data centre on behalf of the ICP materials programme.

Trend exposure programme 2020 – 2021

Environmental data report
October 2020 to December 2021

1 Introduction

Airborne acidifying pollutants are known to be one major cause for corrosion of different materials including the extensive damage that has been observed on historic and cultural monuments. 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. Measurements have been running since September 1987 and has involved exposure of materials at more than 30 test sites in Europe (+ Israel) and North America.

Exposures were running for eight years at 39 test sites in 14 countries from 1987 to 1995 (Henriksen et al., 1997). A second phase of the project started in 1997 with an adjusted number of test sites: 30, and participating countries: 19 (Henriksen and Arnesen, 2003, Henriksen and Arnesen, 2000). During the interim period 1995 to 1997, trend analysis of metal corrosion and exposure of glass and polymeric materials continued. In 2002-2003 the ICP Materials programme was combined with exposures in the EU project MULTI-ASSESS (EVK4-CT-2001-00044) (Henriksen et al. 2004). In 2005-2006, 2008-2009, 2011-2012, 2014-2015 and 2017-2018 annual trend exposures with analysis of corrosion of materials samples, including samples of carbon steel, weathering steel, stainless steel, zinc, copper, aluminium, coil coated steel and Portland limestone, and analysis of soiling of glass, limestone, and marble samples, were carried out. In 2020, and then also in 2021, new exposures were started with selections of the same materials. Table 1 reports the trend exposures participation.

Table 1: Trend exposure years, no of stations and countries.

Exposure years	No. of stations	No. of countries
2005-2006	22	14
2008-2009	24	14
2011-2012	22	13
2014-2015	24	16
2017-2018	24	16
2020-2021	25	16

NILU - Norwegian Institute for Air Research has been the sub-centre responsible for the environmental data collection, storing, evaluation and reporting during the whole programme. This report includes the environmental data reported from the 2020-2021 trend exposures**.** In addition, it includes data for the climate parameters, temperature (T), relative humidity (RH) and precipitation (Prec.) from the end of the previous trend exposure period in October/November 2018. These climate data are reported as monthly values and as annual averages for the years 2018/19 and 2019/20.

The aim of the trend exposures, from 2005, is to follow the development of corrosion trends in Europe from the recent past to present situation with a changing pollution and climate situation. The programme has changed focus over time. In 1987 the focus was on the impact of SO_2, acidity 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 in combination with the climatic parameters, on the atmospheric corrosion of important materials. New parameters like HNO_3 and particulate matter were introduced in the EU-project MULTI-ASSESS, and the study was expanded from corrosion to include soiling. In the new trend exposure programme from 2005, main indicator materials are exposed every third year, and some longer 4 and 8 years exposures are performed, and values of environmental parameters are collected.

The environmental data for the ICP Materials programme has been collected since September 1987. The environmental data from the five trend exposure periods from 2005 to 2018 were reported in Grøntoft and Segura Roux (2020), Grøntoft and Ferm (2017, 2014), and Grøntoft, Arnesen and Ferm (2011, 2007).

The 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" (Swerea KIMAB) which is from 2018 a part of RISE (Research Institutes of Sweden), is serving as the Main Research Centre. Sub-centres in different countries have been appointed, each responsible for the provision and analysis of one or more materials. The present materials Sub-centres are:

Structural metals:

- Steel and zinc (Sub-centre responsible for evaluation: SVUOM Praha a.s., Prague, Czech Republic)
- Weathering steel (CENIM, Madrid, Spain)
- Zinc (EMPA Corrosion/Surface Protection, Dübendorf, Switzerland)
- Copper and aluminium (Swerea KIMAB, Stockholm, Sweden)

Painted materials. Coil coated steel (HAMK Sheet Metal Centre, Häme University of Applied Sciences, Hämeenlinna, Finland)

Stone materials. Portland limestone (Building Research Establishment Ltd., Department of Environment, Waterford, United Kingdom). – To be transferred to Université Paris XII (LISA).

Glass and stone materials – **soiling.** Université Paris XII, France (LISA)

Environmental database. NILU – Norwegian Institute for Air Research, Kjeller Norway.

Other sub-centres through the history of the exposure programs, non-active in 2020-2021, are:

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)

Sub-centres for concrete and more stone materials, some of which are operational within the present trend exposure programme (see above), were active in the MULTI-ASSESS project in 2002:

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 – Université Paris XII, Paris, France)

The range of materials that has been and can be exposed and related scientific partners/contacts is large. Corrosion of carbon steel, zinc and Portland limestone and soiling of modern glass were measured in the trend exposures of 2005/6, 2008/9. In addition, corrosion of weathering steel, copper and aluminium was measured in 2011/12, stainless steel in 2014/15, coil coated steel and soiling of limestone and marble in 2017/18 and 2020/21. Simultaneously a range of environmental parameters was measured (for the 2020-21 campaign see Table 1 and Appendix A – B).

Extended environmental analyses. Passive HNO_3 and particle deposition measurements were introduced in the MULTI-ASSESS project (https://www.ri.se/en/icp-materials/documents/related-eu-projects), and were measured in the trend exposure programmes from 2005 to 2020. In 2011/12 also mandatory measurements of SO_2, HCOOH, CH_3COOH, HCl and HF gas[2] and optional measurements of NH_3 gas were performed with the IVL passive sampling method. IVL provide passive samplers for SO_2, NO_2 and O_3 to stations who do note measure these components with local instruments or samplers. The data reported from IVL is given in Appendix A to D.

[2] HCOOH: formic acid, CH_3COOH: acetic acid, HCl: hydrochloric acid, HF: hydrofluoric acid, all in gaseous form.

2 The measuring programme

The measuring programme for the trend exposures in 2020-2021 is given in Table 2

Table 2: The environmental measurement programme for the ICP Materials trend exposures 2020 – 2021. Components to be measured under topics.

Mandatory
Gases: SO_2, O_3, NO_2, HNO_3 (IVL)
Precipitation: mm, pH, Cl-
Particulates: Particle deposition (IVL)
Climate: Temperature, relative humidity
Optional
Precipitation: Conductivity[1], *SO_4-S, NO_3-N, NH_4-N, Na^+, Ca^{2+}, Mg^{2+}, K^+*
Particulates: *PM_{10}*
Total global irradiation

[1] Conductivity of a solution is a measure of its ability to conduct electricity. The conductivity of water increases if its ion concentration or concentration of dissolved CO_2 increases.

The measurements were partly performed with locally available equipment and partly with passive samplers from IVL-Sweden (Ferm, 1999). The data were reported to the environmental sub-centre as monthly mean values, except for mm precipitation, which was reported as the monthly sum. Several-monthly (mainly two- to four-monthly) mean values from measurements with IVL passive methods were reported for the HNO_3 gas concentrations and particle deposition, for all the sites, and for SO_2, NO_2 and O_3 gas concentrations where local monthly data where elsewise not available. The data are presented as monthly (and several-monthly for the IVL data) and annual average 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 also 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. Data values reported to be "below the detection limit" are, by convention, replaced with one half of the reported detection limits when calculating the annual values of data series.

4 Monthly mean concentrations

The average monthly data reported for the test sites for the trend exposure, October 2020 to November 2021, are given in Appendix A. The calculated average annual data are given in Appendix B. The (mainly) two- to four-monthly values for particles and gases measured with IVL samplers are given with the monthly values in Appendix A. The calculated average annual values for particles and pollutant gases from IVL are given in Appendix B that includes also an erratum for 2017/18. The complete IVL data are given in Appendix C and D. The participating countries are reporting data on a monthly basis. The particle deposition, HNO_3, and additional to local sampling of the gases SO_2, NO_2 and O_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

$$T_M = \frac{\sum_1^i T_i}{i} \qquad i = number\ of\ records \qquad (1)$$

- Mean relative humidity (RH_M)

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

- Mean gas concentrations G_M

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

For some sites where complete information of the sampling period exists, another equation is used for mean gas concentrations.

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

$$n_i = sampling\ period$$

- Precipitation

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

The amount of precipitation is reported as the total amount for that month (in mm). This can be done without adjustment if the availability is 100%. If there are some missing data, however, this needs to be taken into account. As an example, consider a case when sampling is made each day for a month consisting of 30 days (with theoretically the same mm precipitation every day) and where data for two of the days are missing, making the availability 28/30 = 93% (the availability should be weighed with the precipitation amount). For the total amount of precipitation for the 28 days of (say) 28 mm, corresponding to an average precipitation of 1 mm/day, this means that the expected total amount of precipitation for that month should be reported as [30 mm, D, 93%]. In this example it is of course important to distinguish between a day measured to have no rain (counted as 0 mm) and a day with missing data (counted as 1 mm).

- Weighted mean pH (pH_M)

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

- Weighted mean values for cations, anions, and conductivity[3] (C_M)

[3] A cation is a positively charged ion. An anion is a negatively charged ion. The conductivity of a solution is a measure of its ability to conduct electricity.

$$C_M = \frac{\sum_{1}^{i} (mm_i \cdot C_i)}{\sum_{1}^{i} mm_i} \quad (7)$$

6 Sites

The list of test sites continuing in or joining the UN/ECE ICP Materials project in or after 1997 and their years of exposures is given in Table 3 (modified and extended from Henriksen and Arnesen (2000)). The sites with no end year were participating in the 2020/21 trend exposures.

Table 3: List of test sites of UN/ECE ICP Materials exposure programme. Stations participating since 1987 and continuing in the second phase of the exposures from 1997, and added thereafter.

No.	Test site	Country	Class	Test period
1	Prague	The Czech Republic	Urban	1987→
3	Kopisty	"	Industry	1987→
5	Ähtäri	Finland	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→2018
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→ 2009
31	Madrid	Spain	Urban	1987→
33	Toledo	"	Rural	1987→
34	Moscow	Russia	Urban	1987→ 2003
35	Lahemaa	Estonia	Rural	1987→ 2009, 2014-15, 2020→
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→2012
53	Vienna¨	Austria	Urban,	2008→
54	Sofia	Bulgaria	Urban,	2008→2012
55	St. Petersburg	Russia	Urban	2011→2015
57	Hämeenlinna	Finland	Rural, urban	2014→
58	New Haven	USA	Urban	2017→
59	Žilina	Slovakia	Urban	2014→
60	Split	Croatia	Urban, coastal	2017→
61	Zagreb	Croatia	Urban	2017→

7 Regularity and quality of the reported data

The test sites represent areas from background (rural) 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 long

duration programmes like ICP Materials, it is sometime necessary to move a test site due to local problems like new property use. 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 of the different test sites are given on the following pages.

7.1 Review of reported data in the trend exposure programme, 2020 – 2021

Optional data

The reporting of data of cations in precipitation, particle concentration, PM_{10}, and total global radiation (new in 2020/21) were optional in the programme. Near full sets of monthly data of cations in precipitation are reported for sites 10, 21, 23, 31, 33, 35, 40, 44, 60 and 61 (missing data points for station nos. 21: June 2021, 31: November 2020 – January 2021, and for NH_4^+, Na^+, Ca^{2+}, Mg^{2+}, K^+: All months). Full sets of monthly PM_{10} data are reported for sites 1, 3, 10, 15, 16, 21, 23, 24, 31, 33, 35, 40 (minus Nov 2020 – March 2021), 45, 53, 57, 59, 60 and 61. Total global radiation was reported from stations 31, 33, 40, 57 and partly station 1.

Non optional IVL data

IVL data for SO_2, NO_2 and O_3 are reported from several sites, mainly those that didn't have local (non IVL) measurement results for these parameters from the stations – in which case the IVL measurements are non-optional. The non-optional IVL data (HNO_3 and particulate matter deposition) are reported from all the sites, except 16, 35, 41, 50, 58 and 59. The IVL data for HNO_3 and particulate matter deposition, and for SO_2, NO_2 and O_3 where these were measured, are reported with the other station-data in Appendix A and B, and separately in Appendix C and D. Table 4 gives the number of the 26 participating stations that reported the separate environmental data parameters, including the IVL measurements and climate (T, RH, and precipitation amount) data from 2018/19 and 2019/20.

Table 4: No of 26 participating stations reporting environmental data parameters.

Year	2018-19 and 2019-20	2020-21
Parameter	No of stations	
T (°C)	24	26
RH (%)	24	24
Precipitation amount (mm)	23	24
SO_2 (µg/m^3)		24
NO_2 (µg/m^3)		25
O_3 (µg/m^3)		24
HNO_3 (µg/m^3)		23
H^+ in prec. (pH)		17
Cl^- in prec. (mgCl/l)		16
Passive particle deposition (µg cm^{-2} month^{-1})		22
PM_{10} (µg/m^3)		18

For the period 2020/21 all the stations except no. 41 (Berlin) and 58 (West Haven) reported the climate (T, RH, and precipitation) data. The temperatures for 2020/21 at station no. 41 (Berlin) and 58 (West Haven) were found by NILU from open sources, to be able to calculate the O_3 measured with IVL samplers at these stations. A review of the reporting of the

mandatory data from the single countries and stations is given below. “Local data” are those measured with local instruments. “IVL data” are data measured with IVL passive samplers.

Sites 1 and 3 Czech Republic
Sites 1 and 3 have complete sets of data, except for the H^+ and Cl^- in precipitation data not being available in February 2020 and missing due to low precipitation in April 2021 in Kopisty (3). IVL data for HNO_3 and particle deposition is available.

Sites 10 and 41 Germany
Site 10 Bottrop has a complete data set for the period. Site 41 did not report local environmental data. IVL data for HNO_3 and particle deposition is available from both stations.

Sites 13, 14, 15 and 16 Italy
All the italian stations report the climate (T and RH) and precipitation amount data (mm). H^+ and Cl^- in precipitation are missing from all the stations. Local SO_2, NO_2 and O_3 are available from station 15, local NO_2 data from station 16. From stations 13 and 14 IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available. From station 15 IVL data for HNO_3 and particle deposition is available.

Sites 21, 23 and 44 Norway
The Norwegian stations report all the data, except for H+ and Cl- in precipitation in June 2021 from Oslo-Skøyen (21). IVL data for O_3, HNO_3 and particle deposition is available.

Sites 24 and 26 Sweden
Station 24 and 26 report the climate (T and RH) and precipitation data. IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available.

Sites 31 and 33 Spain
The Spanish stations report all the data. IVL data for HNO_3 and particle deposition is available.

Site 35 Estonia
The Estonian site reports all the local data. No IVL data is available.

Site 40 France
Site 40, Paris report all the data. The local SO_2, NO_2 and O_3 data had low or no availability in November 2021, and for NO_2 also in March and April 2020 and September and October 2021. IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available.

Site 45 Switzerland
Station 45 report the climate (T and RH) and precipitation amount (mm) data. H^+ and Cl^- in precipitation were not reported. Local NO_2 and O_3 data were reported. IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available.

Site 50 Poland
Site 50, Katowice, report all the data, except H^+ and Cl^- in precipitation. No IVL data is available.

Site 51 Greece
Site 51, Athens, report all data, except H^+ that is reported only in December 2020 and October 2021 and no Cl- in precipitation. NO_2 was missing in July and August 2021. IVL data for HNO_3 and particle deposition is available.

Site 53 Austria
Site 53, Vienna, reports all the data, except H^+ and Cl^- in precipitation. IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available.

Site 57 Finland
Site 57, Hämeenlinna, report all the climate (RH and T) and precipitation data. NO_2 is reported from local measurements, in Hämeenlinna centre about 3.5 km from the exposure site. IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available.

Site 58 USA
Site 58, New Haven did not report any environmental data. IVL data for HNO_3 and particle deposition is available.

Site 59 Slovakia
Site 59, Žilina, reports all the local data. No IVL data is available.

Sites 60 and 61 Croatia
The Croatian sites report all the data. Locally measured O_3 data are not available from Zagreb (61). IVL data for SO_2, NO_2, O_3, HNO_3 and particle deposition is available. One period of the particle deposition was noted as “dirty” from IVL and as a very high value extreme outlier this data point was not included in the annual average.

8 Data for regression analyses

8.1 The data base

For regression analyses the database for material damage for one year must 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 of 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 distributions of the yearly mean values for the climate and pollution parameters, for the exposure year 2020-2021, are given. The diamonds represent values for measurements with the local (non IVL) station equipment, whereas the squares represent values from measurements with IVL passive samplers.

In Figure 1 the spread in the SO_2-concentrations for the year (2020-2021) is shown. The numbering of the sites is in accordance with Table 3. The measured SO_2 values range from 8.6 µg/m^3 in Kopisty (no. 3) down to 0.1 µg/m^3 for Birkenes (no. 23). The distribution is uneven

with about 60% of the stations below 2 µg/m^3, then an increasing slope until the highest value of 8.6 µg/m^3. The maximum value for the stations, at Kopisty, was significantly lower than the maximum of stations measured since 2011/12. The IVL samplers seemed to systematically measure lower values than reported from the local measurements and very significantly so at stations nos. 60 (Split) and 61 (Zagreb), but the comparison is only available from four stations. Industrial and urban stations had the highest values.

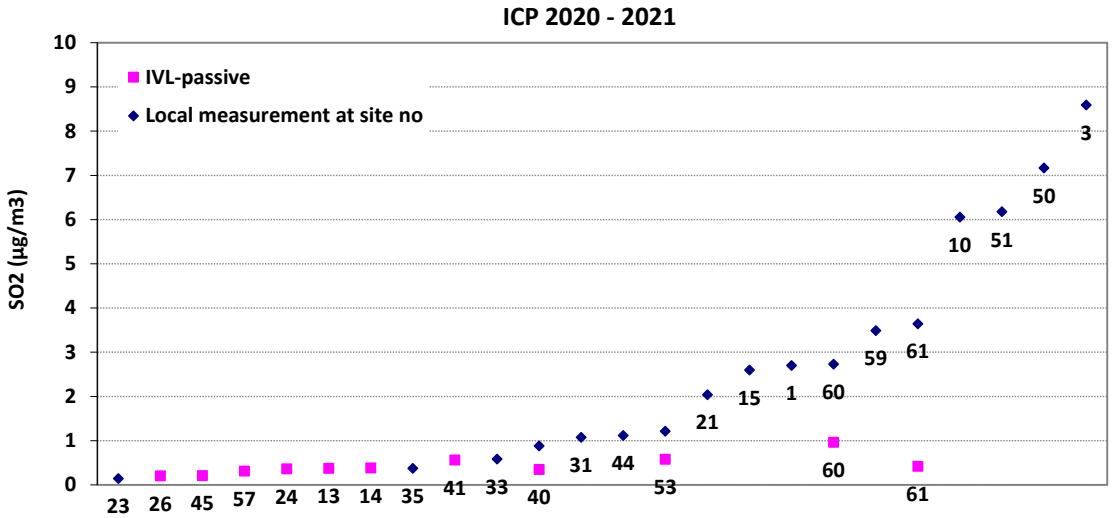

Figure 1: The spread in the yearly mean SO_2-concentrations at the test sites for the test period in ICP Materials.

In Figure 2 the spread in the NO_2-concentrations for the test period year is shown. The values range from 43.1 µg/m^3 for Athens (no. 51) down to 0.7 µg/m^3 for Birkenes (no. 23). The distribution is fairly good. As for SO_2, the IVL samplers seemed (except at station 40 Paris) to systematically measure lower values than reported from the local measurements and very significantly so at stations no. 60 (Split) and 61 (Zagreb), but the comparison is only available from five stations. Urban stations had the highest values, with the industrial stations (50 Katowice, 10 Bottrop, 3 Kopisty) ranking somewhat lower than for SO_2.

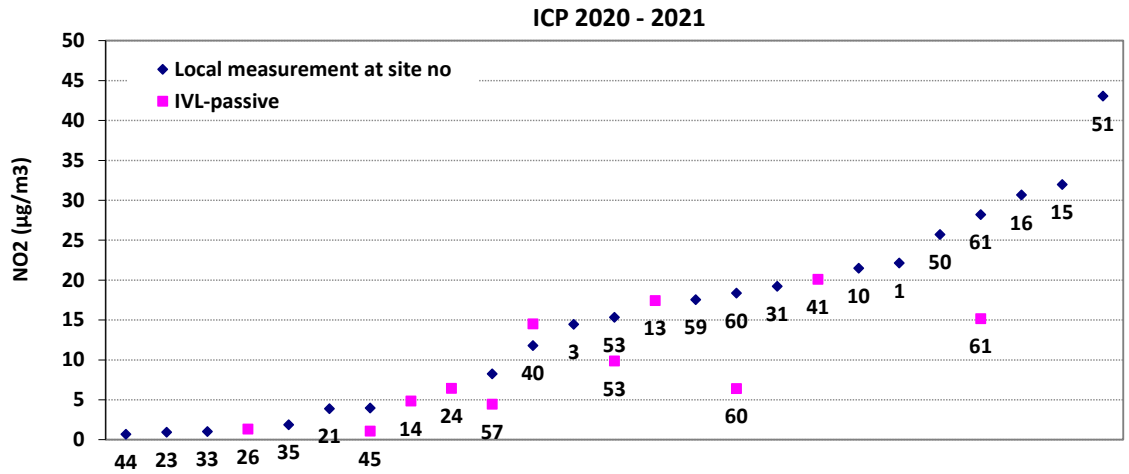

Figure 2: The spread in the yearly mean NO_2-concentrations at the test sites for the test period in ICP Materials.

In Figure 3 the spread in the O_3-concentrations for the test period is shown. The values range from 81.8 µg/m^3 in Toledo (no. 33) to 18.8 µg/m^3 for Athens (no. 51). The Athens station is an urban traffic station where titration of O_3 due to NO-emission is expected. The distribution is fairly good. The correspondence between local and IVL results was fairly good, except for station 40 Paris where much higher values of O_3 were measured by the IVL passive samplers. The lower values are observed in urban and industrial areas. The four highest values were measured in the south of Europe and close alpine area of Switzerland.

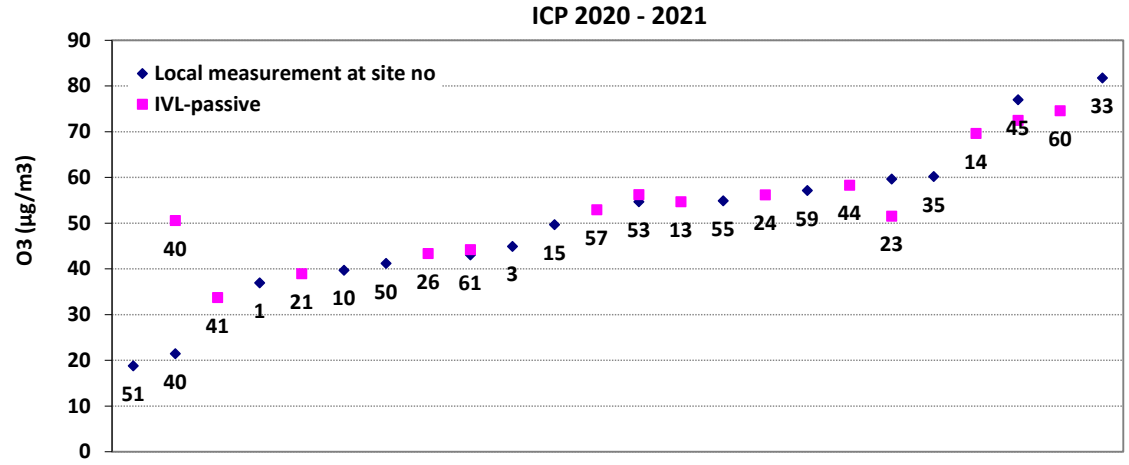

Figure 3: The spread in the measured yearly mean values for O_3-concentrations at the test sites for the test period in ICP Materials.

In Figure 4 the spread for HNO_3-concentrations, measured by IVL samplers, and in addition separate local measurement at station nos. 23 (Birkenes) and 35 (Lahemaa), are shown. The figure shows yearly average values from ~tri-monthly sampling. The values range from

0.78 µg/m^3 in Athens (no. 51) down to 0.06 µg/m^3 at Svanvik (no. 44). The spread is fairly good, but with a few urban stations (this year nos. 51 Athens and 15 Milan) showing significantly higher values, as in previous campaigns.

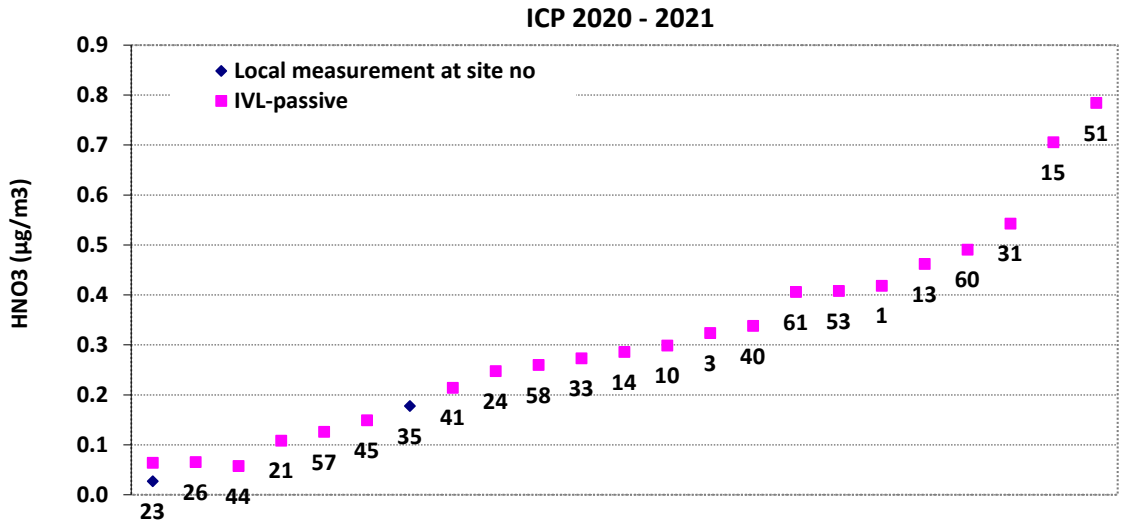

Figure 4: The spread in the measured yearly mean HNO_3-concentrations for the test sites for the test period for ICP Materials.

In Figure 5 the spread in pH on the stations in the test period is shown. The pH values range from 7.2 for Athens (no. 51), then 6.9 for Žilina (no. 59), down to 5.0 in Birkenes. The highest values are observed in cities in southern and central Europe, the lowest values at northern stations. Kopisty (no. 3) reported an about 0.5-point lower pH value than in 2017/18. The spread is good with some increase in the slope towards the higher values, and with reporting from 16 stations, compared to 18 stations in 2017/18.

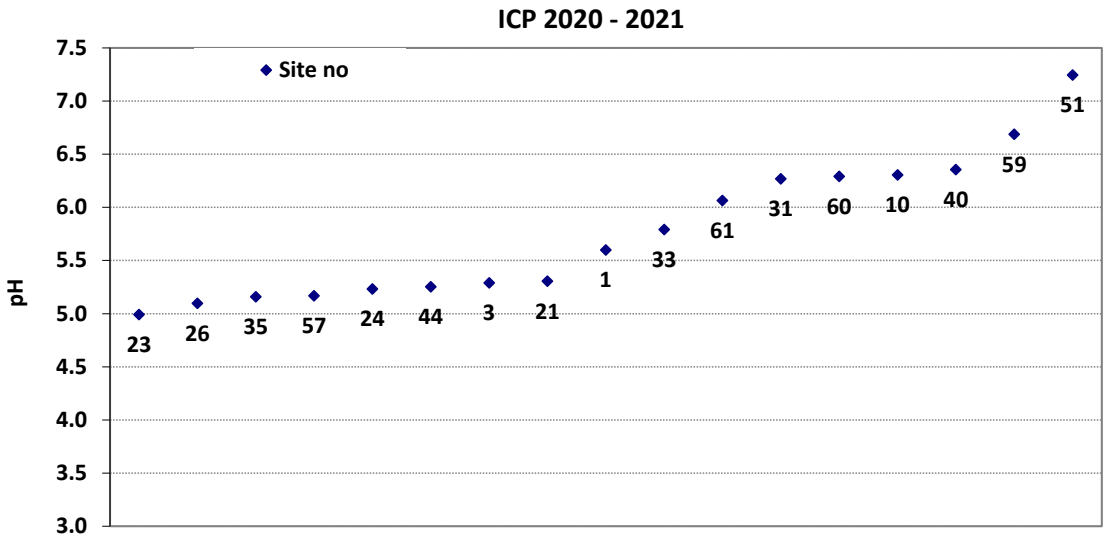

Figure 5: The spread in the measured yearly mean pH-values at the test sites for the test period in ICP Materials.

In Figure 6 the spread for temperature in the test period is shown. The yearly average temperature ranged from 18.6˚C in Athens (no. 51) to 6.3˚C in Hämeenlinna (no. 57) and Katowice (no. 50), as the next lowest values, down to 1.5˚C for the far northern Svanvik station (no. 44). The temperature database covers well the spread expected over most of continental Europe, but not into the north and arctic as illustrated by station 44.

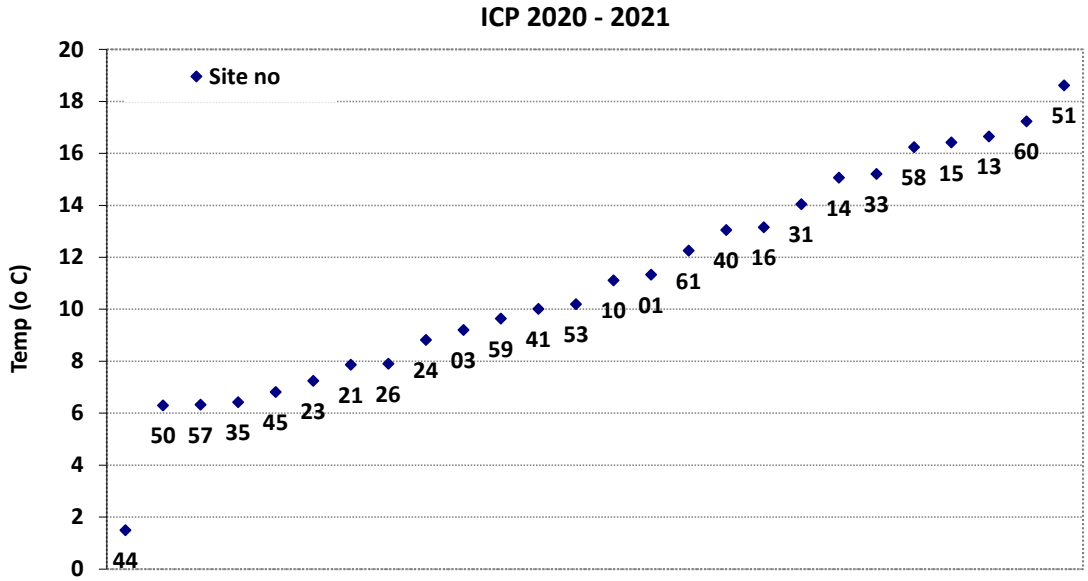

Figure 6: The spread in the measured yearly mean values for temperature at the test sites for the test period for ICP Materials.

In Figure 7 the spread for relative humidity in the test period is shown. The yearly average RH ranges from 91 % in Katowice down to 54 % in Split. The high value in Katowice seems to reflect to low temperatures at this station this year (Figure 6). The spread is quite good, but with a discontinuity at ~65% and few stations at lower RH, as was also observed in 2017/18, and with the one unusually high value in Katowice (no. 50).

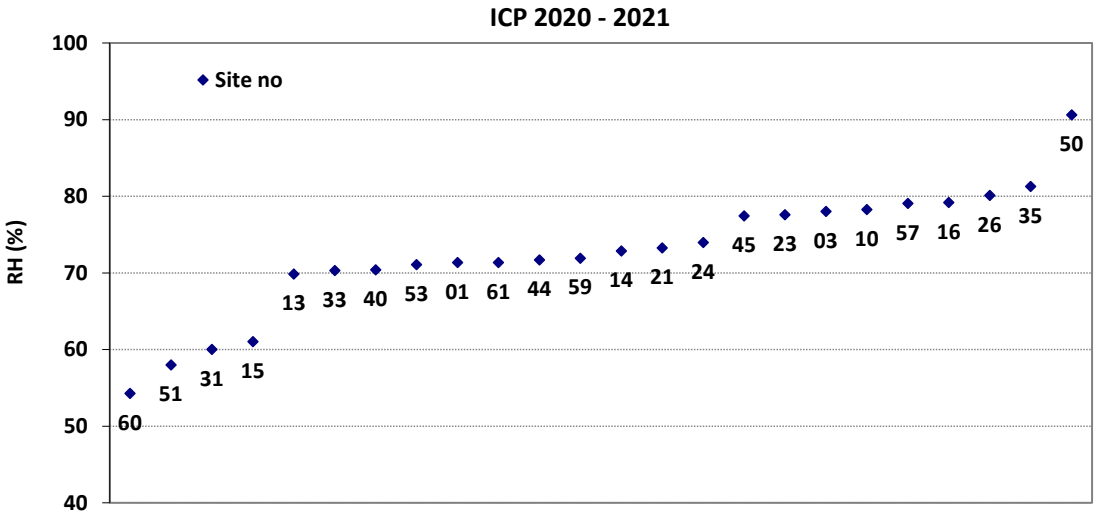

Figure 7: The spread in the measured yearly mean values for relative humidity at the test sites for the test period for ICP Materials.

In Figure 8 the spread for mm precipitation in the test period is shown. The spread is from 1864 mm at Birkenes (no. 23) down to 387 mm in Katowice (no. 50). The climate reported from station 50 stands out this year as cold (Figure 5) and humid (Figure 6), but still with the least precipitation of all the stations. The spread is good. It is expected that stations on the European west coast can have considerably higher average yearly precipitation amounts then recorded for the ICP stations, but this area is not well represented.

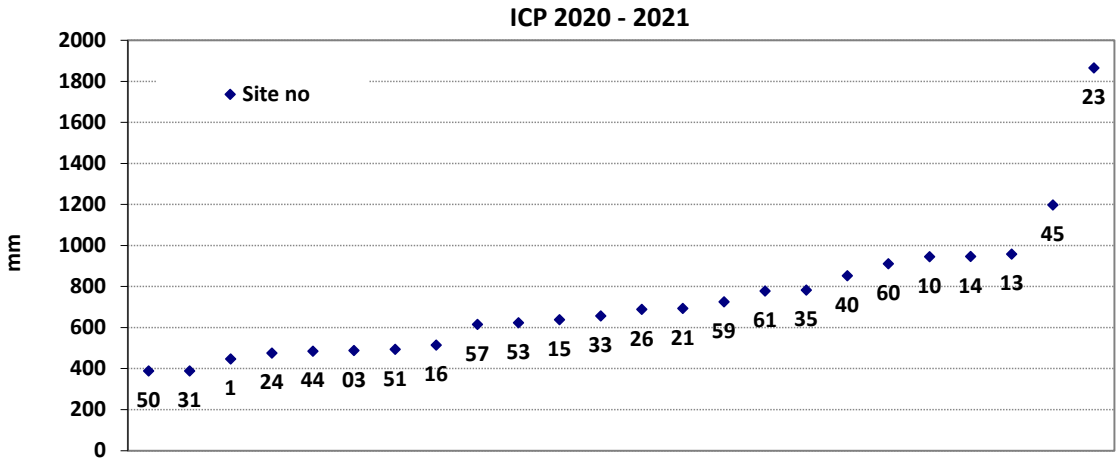

Figure 8: The spread in the measured yearly values for the total precipitation amount at the test sites for the test period for ICP Materials.

Figure 9 shows the spread in the concentration of chloride (Cl^-) in precipitation measured in the test period. The values range from 4.6 mg/l in Split (no. 60) down to 0.28 mg/l in Lahemaa (no. 35). The spread is even except the double value in the coastal town of Split to the next highest measuring station Prague (no. 1) at 2.2 mg/l.

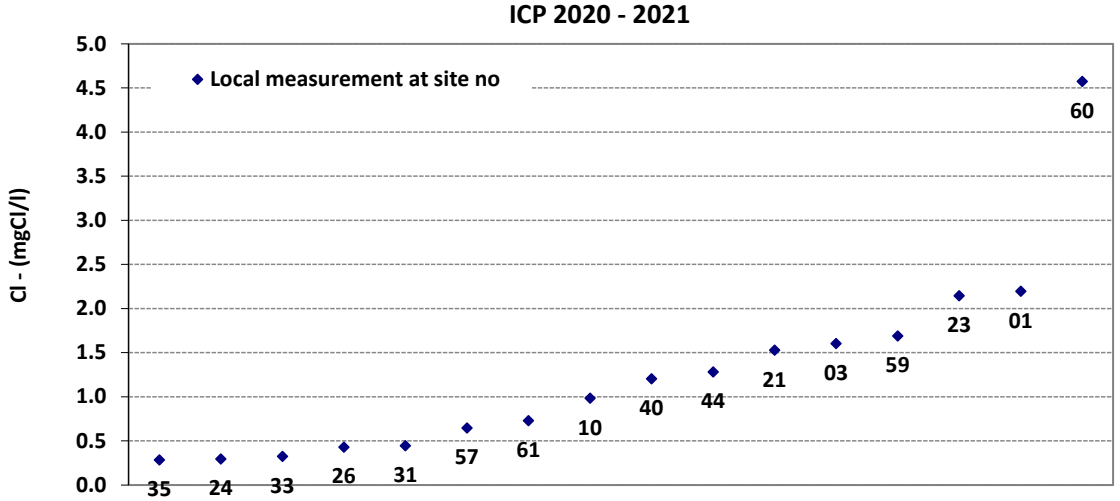

Figure 9: The spread in the measured yearly mean values for Cl^- in precipitation at the test sites for the test period for ICP Materials.

Figure 10 gives the yearly annual results from the measurements of particles. Values are shown for PM_{10} (µg/m^3) from local (non IVL) measurements at the stations and for yearly averages of particle deposition (µg/cm^2·month) from the ~tri-monthly sampling by using IVL passive particle deposition samplers exposed in a situation shielded from rain. The PM_{10}-values ranged from 34.4 µg/m^3 in Venice (no. 16) to 4.1 µg/m^3 at Birkenes (no. 23). The particle deposition values ranged from the much higher value in Berlin (no. 41, 139 µg/cm^2 per month) than other stations, down to 1.3 µg/cm^2 per month in Aspvreten (no. 26). The spread was good and even for PM_{10}, but with two steps to higher values for the particle deposition: First a significant step to stations 13 (Rome), 14 (Casaccia) and 51 (Athens), then a very high step to the value for Berlin.

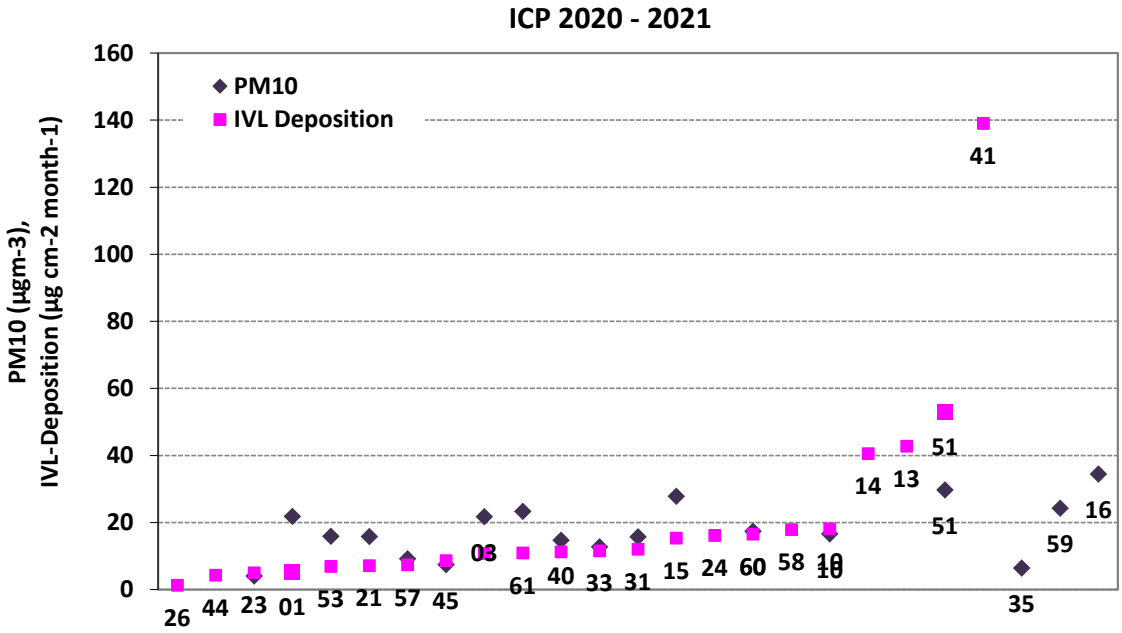

Figure 10: The spread in the measured yearly mean values for PM_{10}-concentration (blue diamonds) and particle deposition (pink squares) at the test sites for the test period for ICP Materials. PM_{10}-measurements were optional.

The results for the optionally sampled PM_{10}-data should be interpretated with caution as the distance from the sampling stations to the materials' exposure sites and other environmental measurements is unspecified. Some information about the locations for the PM_{10} measurements is available in Tidblad and Gordon (2012).

Conclusions

The database obtained during the trend exposure period 2020-2021 has a similar regularity and quality as the previous years of the ICP Materials programme. Sites belonging to the national surveillance programmes and EMEP, have the best regularity. Some of the urban sites have a lower regularity. Except the overall missing data from two station (nos. 41 and 58) and the missing data for the precipitation quality (pH and Cl^-) from several stations, the data coverage is good. The spread in the data for the different environmental parameters is sufficient for statistical dose response analyses.

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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. Empty cells indicate that values are not available (n.a.) Measured zero values are reported as “0”.

	Mandatory																	
	Sampling		Climate										Precipitation			Particles		
	Period		Temp	RH	SO2	passive SO2 (Tri- or four-monthly value given in last month)	NO2	passive NO2 (Tri- or four-monthly value given in last month)	O3	passive O3 (Tri- or four-monthly value given in last month)	HNO3	passive HNO3 (Tri- or four-monthly value given in last month)	Amount	H+	Cl-	IVL-passive sampler Particle depositon (Tri- or four-monthly value given in last month)		
Site no	Year	Month	°C	%	µg/m³		µg/m²	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mm	pH	mgCl/l	µg/cm²month	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
01	2018	11	5.1	79	2.9		41.4		12				13.6	6.9	2.57			
01	2018	12	3.2	77	2.9		58.0		24				44.2	7.0	0.41			
01	2019	1	0.2	76	4.9		33.3		31				20.6	6.9	6.71			
01	2019	2	3.3	69	4.9		46.1		25				17.6	6.6	2.92			
01	2019	3	7.4	66	3.5		29.5		46				23.1	7.0	2.78			
01	2019	4	11.0	56	3.5		23.2		55				27.4	5.8	1.62			
01	2019	5	12.3	66	3.9		23.7		47				69.5	6.0	1.99			
01	2019	6	23.3	55	3.9		20.1		68				50.1	6.6	3.94			
01	2019	7	21.2	56	2.6		21.4		61				41.9	6.3	0.97			
01	2019	8	20.6	67	2.6		25.2		47				65.3	5.6	0.76			
01	2019	9	15.0	69	3.5		30.2		34				36.4	6.5	1.93			
01	2019	10	10.7	79	3.5		27.7		19				32.6	6.4	3.35			
01	2019	11	6.4	82	3.3		26.6		16				35.3	6.5	2.65			
01	2019	12	3.3	77	3.3		27.7		22				11.3	6.8	3.85			
01	2020	1	2.2	80	2.9		31.1		17				10.1	7.2	11.20			
01	2020	2	5.6	68	2.9		24.6		45				68.1	7.1	3.32			
01	2020	3	5.6	62	2.9		22.6		43				51.3	6.2	2.35			
01	2020	4	11.4	49	2.9		20.1		52				14.0	7.0	6.18			
01	2020	5	12.9	62	2.3		18.3		55				82.2	5.9	1.84			
01	2020	6	18.1	70	2.3		20.2		50				110.9	5.7	2.89			
01	2020	7	20.3	58	1.7		21.2		52				21.6	6.8	1.49			
01	2020	8	22.7	64	1.7		22.0		51				79.0	5.7	2.43			
01	2020	9	17.6	67	4.2		24.5		37				58.4	5.1	2.15			
01	2020	10	11.9	79	4.2		21.7		23				63.0	6.0	2.18			
01	2020	11	6.6	82	2.9		28.1		14				9.0	6.4	5.66			
01	2020	12	4.5	80	2.9		22.2		19				12.0	6.6	3.68			
01	2021	1	1.8	81	2.5		25.2		24			0.24	35.4	4.5	2.35	5	29.10.2020 12:00	01.01.2021 12:00
01	2021	2	1.3	80	2.5		23.4		25				21.0	6.6	6.23			
01	2021	3	5.9	69	2.3		24.7		37				23.0	6.4	4.13			
01	2021	4	8.4	61	2.3		17.3		57			0.19	12.2	6.7	1.57	5	01.01.2021 12:00	13.04.2021 12:00
01	2021	5	13.6	65	2.2		14.5		55				82.4	7.2	0.60			
01	2021	6	23.0	60	2.2		30.5		61				85.8	6.9	1.83			
01	2021	7	22.4	65	3.3		13.4		53			0.70	75.2	7.7	2.56	5	13.04.2021 12:00	01.07.2021 00:00
01	2021	8	19.4	71	3.3		13.8		40				72.0	7.1	1.06			
01	2021	9	17.9	70	3.0		29.1		34				13.8	6.6	4.46			
01	2021	10	11.1	72	3.0		23.4		25				4.8	7.1	4.23			
01	2021	11										0.51					01.07.2021 12:00	12.11.2021 12:00

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2 mont)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
03	2018	11	4.6	87	8.3		28.3		16				8.2	8.8	1.45			
03	2018	12	2.7	84	8.4		28.4		32				58.0	5.3	0.83			
03	2019	1	0.4	81	7.2		25.1		42				48.7	5.3	4.47			
03	2019	2	2.7	76	6.3		30.5		34				15.9	n	n			
03	2019	3	7.1	69	6.4		18.5		59				37.3	6.4	1.40			
03	2019	4	11.0	57	5.6		18.0		72				10.9	8.0	14.90			
03	2019	5	12.3	67	9.1		13.6		67				88.9	7.8	3.55			
03	2019	6	22.4	59	8.2		8.6		85				59.5	6.4	2.07			
03	2019	7	20.9	56	14.7		5.7		75				38.9	7.2	10.90			
03	2019	8	19.5	75	7.2		6.3		61				65.7	4.6	3.52			
03	2019	9	14.2	76	6.9		15.4		47				57.9	6.8	2.49			
03	2019	10	10.0	85	9.5		11.8		27				35.0	4.4	2.22			
03	2019	11	5.8	90	7.1		23.2		21				35.1	4.9	1.94			
03	2019	12	2.9	83	8.2		25.6		30				25.3	5.0	4.94			
03	2020	1	1.4	88	6.1		22.1		24				14.6	4.8	4.51			
03	2020	2	4.8	76	7.0		13.7		53				66.1	6.3	3.05			
03	2020	3	4.9	67	8.1		21.9		55				19.8	6.2	4.65			
03	2020	4	10.9	55	7.2		13.2		68				8.4	7.9	31.00			
03	2020	5	12.9	62	4.8		11.8		68				28.3	7.9	8.20			
03	2020	6	18.3	69	5.2		15.8		67				78.7	7.4	2.88			
03	2020	7	19.6	61	6.1		15.6		64				16.5	8.3	10.90			
03	2020	8	20.5	70	6.1		12.0		66				71.3	5.1	1.67			
03	2020	9	15.0	76	9.0		18.6		48				49.4	5.9	1.65			
03	2020	10	9.6	87	10.7		28.4		30				34.4	4.7	2.08			
03	2020	11	4.4	87	10.9		24.5		20				9.5	6.7	4.64			
03	2020	12	2.5	90	9.3		17.9		22				17.2	5.5	3.25			
03	2021	1	0.3	84	4.3		17.1		32			0.25	43.1	4.3	2.77	5	28.10.2020 12:00	01.01.2021 12:00
03	2021	2	-1.2	86	9.6		22.7		30				41.1	6.3	1.68			
03	2021	3	4.4	73	7.7		16.5		50				11.9	6.6	4.65			
03	2021	4	7.0	64	12.2		11.2		69			0.25	10.2	6.6	-	11	01.02.2021 12:00	25.04.2021 12:00
03	2021	5	11.8	69	9.1		10.4		67				89.8	7.4	0.64			
03	2021	6	20.3	70	8.3		7.6		69				116.1	7.8	1.56			
03	2021	7	19.9	74	10.8		8.7		57			0.56	85.4	7.6	1.14		25.04.2021 12:00	03.07.2021 16:05
03	2021	8	17.2	79	6.2		7.3		49				45.0	6.2	1.10			
03	2021	9	15.6	79	8.1		9.4		45				13.8	5.1	1.74			
03	2021	10	8.2	81	6.6		20.3		31				4.8	6.5	2.68			
03	2021	11										0.29				13	03.07.2021 16:20	11.11.2021 14:00

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/cm²month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
10	2018	11	7.0	81	7.7		29.0		14				18.8	6.8	0.16			
10	2018	12	6.3	83	8.5		26.0		25				130.0	6.0	1.99			
10	2019	1	2.9	85	6.3		28.0		29				84.5	6.1	3.09			
10	2019	2	6.8	73	10.3		37.0		26				53.0	6.0	0.76			
10	2019	3	8.7	73	11.5		20.0		52				102.4	6.5	2.46			
10	2019	4	11.8	62	4.6		20.0		61				25.9	6.2	0.67			
10	2019	5	12.6	70	4.2		15.0		57				46.9	6.9	0.89			
10	2019	6	21.0	62	6.8		15.0		72				54.0	6.9	0.45			
10	2019	7	20.6	62	4.7		18.0		62				34.5	7.0	0.37			
10	2019	8	20.4	67	7.1		23.0		55				65.2	7.0	0.57			
10	2019	9	15.4	74	6.5		22.0		36				58.0	6.7	1.06			
10	2019	10	12.5	82	12.2		26.0		27				98.6	6.3	0.70			
10	2019	11	6.5	88	8.0		29.0		17				98.6	6.1	0.76			
10	2019	12	6.3	82	8.4		29.0		27				82.5	6.1	1.66			
10	2020	1	6.0	85	13.6		31.0		26				56.4	5.6	1.58			
10	2020	2	7.5	77	11.0		23.0		46				163.1	5.9	2.88			
10	2020	3	7.8	66	6.5		20.0		51				69.1	6.3	0.95			
10	2020	4	12.8	56	6.2		20.0		61				32.4	7.1	0.56			
10	2020	5	14.2	59	4.1		15.0		64				11.3	6.5	1.01			
10	2020	6	19.3	64	5.0		15.0		66				60.8	6.5	0.50			
10	2020	7	18.6	69	4.1		14.0		47				61.9	6.4	0.63			
10	2020	8	22.1	65	4.3		18.0		64				30.3	6.6	1.06			
10	2020	9	16.4	72	5.6		25.0		37				52.0	7.0	0.56			
10	2020	10	12.2	82	6.9		21.0		32				83.4	6.5	1.54			
10	2020	11	8.9	83	8.1		26.0		21				28.8	6.7	1.33			
10	2020	12	6.0	87	6.0		25.0		23				65.8	6.0	0.72			
10	2021	1	3.3	86	6.0		26.0		26			0.16	87.1	6.0	1.19	22	06.10.2020 10:30	06.01.2021 13:43
10	2021	2	4.9	75	7.4		28.0		38				63.4	6.4	1.04			
10	2021	3	7.2	72	5.9		24.0		47			0.18	50.7	6.7	1.99	20	06.01.2021 13:49	31.03.2021 07:35
10	2021	4	7.7	66	3.2		18.0		60				36.6	6.6	2.05			
10	2021	5	12.4	72	6.3		16.0		58				97.6	6.6	1.01			
10	2021	6	20.7	68	5.2		15.0		73			0.46	111.7	6.3	0.34	16	31.03.2021 07:37	23.06.2021 07:39
10	2021	7	19.5	75	5.9		15.0		49				98.7	6.4	0.32			
10	2021	8	17.7	79	4.5		15.0		42				76.1	6.5	0.69			
10	2021	9	16.6	80	5.2		22.0		38			0.41	40.0	6.1	0.34	13	23.06.2021 07:40	15.09.2021 07:29
10	2021	10	11.8	83	8.3		22.0		31				56.6	6.2	1.12			
10	2021	11	6.7	89	5.9		28.0		18				48.9	6.2	1.48			
10	2021	12	5.5	88	6.3		27.0		25				42.6	5.7	1.52			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
13	2018	11	13.9	84									165.3					
13	2018	12	9.7	80									26.6					
13	2019	1	6.9	76									74.9					
13	2019	2	10.5	67									35.4					
13	2019	3	13.4	67									6.7					
13	2019	4	14.8	72									62.1					
13	2019	5	15.8	78									101.7					
13	2019	6	26.2	57									1.2					
13	2019	7	27.6	56									44.9					
13	2019	8	27.6	58									15.1					
13	2019	9	23.2	66									88.5					
13	2019	10	19.1	76									61.3					
13	2019	11	14.5	86									238.2					
13	2019	12	11.0	76									118.4					
13	2020	1	8.7	76									17.1					
13	2020	2	11.5	71									13.4					
13	2020	3	12.1	69									45.3					
13	2020	4	15.2	67									27.8					
13	2020	5	20.5	58									24.0					
13	2020	6	22.8	63									61.0					
13	2020	7	27.2	54									13.4					
13	2020	8	27.7	58									28.0					
13	2020	9	23.1	68									143.7					
13	2020	10	16.5	78									81.6					
13	2020	11	14.0	79									33.7					
13	2020	12	9.9	84									170.4					
13	2021	1	8.1	79									162.4					
13	2021	2	11.3	75									57.9					
13	2021	3	11.3	66		0.4		23.1				0.13	93.6				15.12.2020 12:20	23.03.2021 09:30
13	2021	4	13.6	68									84.0					
13	2021	5	18.5	66									14.2					
13	2021	6	24.6	61		0.4		12.4				0.55	22.0			41	23.03.2021 09:30	16.06.2021 10:30
13	2021	7	27.2	57									2.7					
13	2021	8	27.2	59									21.4					
13	2021	9	23.9	64		0.4		11.2				0.85	4.2			64	16.06.2021 10:33	22.09.2021 10:02
13	2021	10	16.9	68									20.3					
13	2021	11	14.3	82									197.3					
13	2021	12	9.7	79		0.3		23.1				0.31	107.6			21	22.09.2021 10:06	16.12.2021 09:55

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
14	2018	11	8.5	77									43.6					
14	2018	12	5.4	74									90.2					
14	2019	1	8.9	66									58.2					
14	2019	2	11.3	69									8.2					
14	2019	3	12.8	75									89.4					
14	2019	4	14.1	81									142.6					
14	2019	5	24.0	64									0.0					
14	2019	6	26.0	61									99.8					
14	2019	7	25.7	63									4.8					
14	2019	8	21.1	72									68.2					
14	2019	9	17.1	83									78.0					
14	2019	10	12.7	93									321.0					
14	2019	11	9.4	80									67.0					
14	2019	12	7.7	78									14.6					
14	2020	1	9.8	75									22.4					
14	2020	2	10.8	71									26.6					
14	2020	3	14.5	67									15.8					
14	2020	4	18.7	64									21.0					
14	2020	5	21.5	67									57.6					
14	2020	6	27.0	51									29.0					
14	2020	7	26.2	61									3.0					
14	2020	8	21.5	71									97.2					
14	2020	9	14.8	81									117.2					
14	2020	10	12.6	81									48.8					
14	2020	11	8.6	86									218.4					
14	2021	12	6.7	80									158.8					
14	2021	1	9.5	80									52.0					
14	2021	2	9.5	71									64.8					
14	2021	3	11.7	73		0.4		7.7				0.20	57.2			35	14.12.2020 15:15	22.03.2021 12:35
14	2021	4	16.5	72									19.6					
14	2021	5	22.7	66									36.2					
14	2021	6	25.4	61		0.4		2.9				0.28	1.0			41	22.03.2021 12:40	17.06.2021 13:35
14	2021	7	25.5	62									6.4					
14	2021	8	22.4	66									5.4					
14	2021	9	15.7	69		0.4		2.2				0.45	27.0			68	17.06.2021 13:40	21.09.2021 14:24
14	2021	10	12.8	83									212.0					
14	2021	11	8.9	77									87.8					
14	2021	12				0.4		6.7				0.21				16	21.09.2021 14:34	16.12.2021 14:15

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
15	2018	11	4.0	86	5.3		41.9		11				118.0					
15	2018	12	7.6	81	2.5		53.8		8				19.8					
15	2019	1	4.9	65	1.5		57.9		11				9.8					
15	2019	2	8.9	61	2.9		69.8		18				38.2					
15	2019	3	12.8	48	2.4		46.2		44				11.0					
15	2019	4	14.3	62	1.5		30.2		57				60.4					
15	2019	5	15.8	66	1.5		25.3		60				88.8					
15	2019	6	26.8	47	2.9		32.9		91				27.8					
15	2019	7	28.2	50	1.7		19.0		91				45.2					
15	2019	8	27.5	54	0.9		17.6		77				57.8					
15	2019	9	22.6	58	1.4		34.2		53				65.4					
15	2019	10	17.0	75	1.7		34.2		24				131.4					
15	2019	11	10.0	87	2.1		15.4		10				183.2					
15	2019	12	7.7	74	3.5		40.9		5				81.0					
15	2020	1	6.5	71	4.9		57.6		8				28.8					
15	2020	2	10.0	57	4.6		47.6		25				9.0					
15	2020	3	10.8	59	3.6		29.2		45				69.8					
15	2020	4	16.3	45	4.5		17.9		72				23.0					
15	2020	5	20.1	56	4.2		12.2		72				102.8					
15	2020	6	22.6	60	4.5		15.0		67				94.4					
15	2020	7	26.0	54	2.5		15.8		86				88.8					
15	2020	8	26.4	57	2.5		15.5		80				45.0					
15	2020	9	22.2	59	3.2		25.9		61				75.4					
15	2020	10	14.5	74	3.1		34.7		21				106.0					
15	2020	11	10.7	79	3.6		47.1		8				0.0					
15	2021	12	5.7	90	4.0		42.3		7				129.6					
15	2021	1	4.6	75	4.0		53.6		13				101.2					
15	2021	2	9.0	72	4.1		49.9		20				49.0					
15	2021	3	11.7	49	4.5		44.1		47			< 0.006	2.6			1	17.12.2020 11:45	24.03.2021 10:50
15	2021	4	13.5	55	2.6		25.6		66				44.8					
15	2021	5	17.7	57	1.6		21.2		59			0.95	78.0					
15	2021	6	25.4	49	2.6		19.4		83				27.6			38	24.03.2021 10:52	23.06.2021 10:45
15	2021	7	25.7	56	2.3		16.6		79			1.48	56.6					
15	2021	8	25.4	53	1.4		12.6		80				25.4					
15	2021	9	22.5	58	1.7		26.2		65			0.38	80.0			14	23.06.2021 10:50	23.09.2021 10:30
15	2021	10	15.1	69	1.9		42.2		25				44.2					
15	2021	11	10.0	80	1.9		40.4		11				127.8					
15	2021	12	5.1	81	3.0		56.6		4				31.0			8	23.09.2021 10:34	09.12.2021 10:21

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
16	2018	11	10.2	85			37.2						103.2					
16	2018	12	3.0	87			52.1						19.2					
16	2019	1	2.2	79			58.1						10.4					
16	2019	2	5.7	79			60.6						34.4					
16	2019	3	9.5	73			45.6						22.2					
16	2019	4	12.4	77			33.9						152.4					
16	2019	5	13.8	80			25.2						207.0					
16	2019	6	23.9	71			26.5						5.6					
16	2019	7	23.2	72			26.6						113.0					
16	2019	8	23.5	73			23.0						43.6					
16	2019	9	18.4	75			30.4						45.4					
16	2019	10	14.2	83			35.9						55.8					
16	2019	11	9.1	89			34.6						125.4					
16	2019	12	4.9	85			40.6						85.4					
16	2020	1	3.4	86			38.9						19.6					
16	2020	2	7.2	79			44.6						7.2					
16	2020	3	9.1	73			27.9						60.8					
16	2020	4	13.8	68			19.9						36.2					
16	2020	5	17.9	73			15.4						31.4					
16	2020	6	20.9	78			17.1						139.6					
16	2020	7	23.9	72			19.8						28.0					
16	2020	8	24.1	78			19.6						106.8					
16	2020	9	20.0	77			24.6						43.4					
16	2020	10	12.7	89			31.2						117.6					
16	2020	11	8.3	82			41.6						14.4					
16	2021	12	5.4	91			35.2						106.6					
16	2021	1	2.8	85			45.1						77.4					
16	2021	2	6.8	81			40.4						22.6					
16	2021	3	8.2	76			36.8						8.0					
16	2021	4	11.0	78			24.5						84.0					
16	2021	5	15.3	78			17.3						98.8					
16	2021	6	23.2	74			19.7						9.6					
16	2021	7	23.6	76			20.1						50.8					
16	2021	8	21.9	74			18.9						19.2					
16	2021	9	18.5	78			29.7						14.2					
16	2021	10	12.9	77			38.7						8.0					
16	2021	11					33.3											

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^{2}month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
21	2018	11	3.4	88									101.3					
21	2018	12	-1.2	85									63.2					
21	2019	1	-2.8	76									35.6					
21	2019	2	0.5	83									81.1					
21	2019	3	2.3	69									73.4					
21	2019	4	8.7	45									11.3					
21	2019	5	10.4	65									83.0					
21	2019	6	15.4	71									124.8					
21	2019	7	17.9	66									58.4					
21	2019	8	16.8	79									127.1					
21	2019	9	11.4	76									168.8					
21	2019	10	5.4	84									110.3					
21	2019	11	1.0	86									112.3					
21	2019	12	0.4	92									57.0					
21	2020	1	2.7	84									74.9					
21	2020	2	1.9	75									34.3					
21	2020	3	3.0	72									44.4					
21	2020	4	7.3	54									32.3					
21	2020	5	10.2	53									45.5					
21	2020	6	18.8	63									109.3					
21	2020	7	15.1	71									164.6					
21	2020	8	17.2	73									55.6					
21	2020	9	12.8	76									76.3					
21	2020	10	8.1	84	0.0		0.0						205.9					
21	2020	11	5.2	86	2.3		4.8						78.6	6.3	2.03			
21	2020	12	2.2	91	3.8		4.7						150.4	4.7	0.58			
21	2021	1	-4.7	84	5.1		6.9					0.05	34.2	5.5	5.80	3	22.10.2020 12:10	22.01.2021 14:00
21	2021	2	-3.2	77	2.8		7.2						26.9	6.7	8.21			
21	2021	3	3.1	69	3.4		4.8						16.1	6.5	3.09			
21	2021	4	5.7	47	2.4		2.5					0.07	4.7	6.3	1.72	11	22.01.2021 14:24	23.04.2021 09:30
21	2021	5	10.6	70	0.1		2.6						60.1	5.9	0.32			
21	2021	6	17.3	68	0.2		2.4						55.2					
21	2021	7	19.9	65	0.6		2.6					0.17	65.6	5.8	0.47	8	23.04.2021 09:30	21.07.2021 21:50
21	2021	8	16.4	66	1.8		2.0						45.9	5.9	0.66			
21	2021	9	13.2	74	1.9		1.6						69.4	6.1	0.67			
21	2021	10	8.7	82	0.1		4.5						85.2	6.2	1.34			
21	2021	11	2.7	83								0.13				7	21.07.2021 21:55	02.11.2021 11:00
21	2021	12	-3.0	83														

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
23	2018	11	3.7	88	0.1		1.3		48		0.02		221.7					
23	2018	12	0.3	85	0.1		1.0		52		0.02		181.2					
23	2019	1	-1.6	80	0.1		0.9		66		0.03		113.3					
23	2019	2	1.7	83	0.1		1.2		70		0.03		124.4					
23	2019	3	2.4	77	0.1		0.6		82		0.01		175.5					
23	2019	4	5.9	65	0.3		1.0		94		0.07		54.7					
23	2019	5	9.0	64	0.2		0.8		84		0.03		105.7					
23	2019	6	13.6	74	0.2		1.1		74		0.06		144.4					
23	2019	7	15.6	73	0.2		0.9		54		0.05		90.6					
23	2019	8	14.9	81	0.2		1.4		56		0.04		269.8					
23	2019	9	10.5	78	0.1		1.4		51		0.01		221.1					
23	2019	10	5.2	86	0.1		1.1		43		0.02		221.2					
23	2019	11	1.3	85	0.0		1.2		42		0.02		277.2					
23	2019	12	1.5	88	0.1		1.0		51		0.01		211.6					
23	2020	1	3.3	84	0.0		0.4		63		0.01		208.0					
23	2020	2	1.5	84	0.1		0.8		65		0.01		287.2					
23	2020	3	2.0	77	0.1		1.3		69		0.02		148.8					
23	2020	4	5.4	66	0.2		0.9		72		0.02		56.7					
23	2020	5	8.9	58	0.2		0.8		67		0.02		54.2					
23	2020	6	16.1	68	0.3		0.8		62		0.05		170.9					
23	2020	7	13.3	76	0.1		0.7		49		0.02		184.9					
23	2020	8	15.5	80	0.3		1.2		52		0.10		86.1					
23	2020	9	11.9	81	0.1		0.9		48		0.02		110.4					
23	2020	10	7.0	87	0.1		1.1		46		0.02		257.2					
23	2020	11	6.0	91	0.0		1.0		49		0.02		207.3	5.1	1.79			
23	2020	12	3.1	94	0.1		1.9		42		0.02		514.3	4.7	2.51			
23	2021	1	-3.8	86	0.0		0.8		49		0.01	0.03	95.4	5.2	10.34	3	28.10.2020 10:00	28.01.2021 14:00
23	2021	2	-4.1	69	0.1		1.7		64		0.02		73.9	4.9	1.57			
23	2021	3	3.5	71	0.1		1.0		73		0.02		106.1	5.5	1.65			
23	2021	4	4.4	54	0.1		0.6		79		0.02	0.04	15.0	5.3	1.80	3	28.01.2021 14:00	28.04.2021 13:45
23	2021	5	8.9	77	0.4		0.6		69		0.05		212.5	5.4	0.45			
23	2021	6	15.2	74	0.3		0.6		59		0.04		60.0	5.6	0.24			
23	2021	7	17.7	73	0.2		0.5		60		0.04	0.12	70.4	5.1	0.74	7	28.04.2021 13:45	28.07.2021 05:00
23	2021	8	14.6	76	0.1		0.6		54		0.02		88.6	5.3	1.10			
23	2021	9	12.8	81	0.1		0.9		59		0.04		139.2	5.1	0.76			
23	2021	10	8.7	86	0.1		1.1		60		0.02		282.1	5.0	2.37			
23	2021	11	3.9	89								0.07				6	28.07.2021 05:00	10.11.2021 09:55

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
24	2018	11	4.4	88									32.8	5.6	0.86			
24	2018	12	0.8	90									32.1	5.2	1.70			
24	2019	1	-1.7	85									13.5	5.3	0.58			
24	2019	2	1.8	79									41.3	5.1	0.61			
24	2019	3	2.5	74									48.5	6.1	0.88			
24	2019	4	7.1	53									0.4	0.0	0.00			
24	2019	5	10.5	64									52.5	6.2	0.36			
24	2019	6	18.0	59									22.2	6.2	0.46			
24	2019	7	17.4	64									53.2	5.6	0.19			
24	2019	8	17.6	72									55.8	5.4	0.19			
24	2019	9	13.0	73									40.1	5.3	0.34			
24	2019	10	7.2	83									53.5	5.4	0.36			
24	2019	11	4.0	88									54.9	4.9	0.26			
24	2019	12	2.9	88									55.1	5.1	0.46			
24	2020	1	4.1	80									15.4	5.1	0.51			
24	2020	2	2.8	76									27.3	5.5	1.33			
24	2020	3	3.4	67									40.7	5.3	0.29			
24	2020	4	6.9	54									23.6	6.0	0.50			
24	2020	5	9.7	60									30.5	5.9	0.27			
24	2020	6	18.4	56									45.0	5.6	0.07			
24	2020	7	16.8	65									55.5	5.8	0.15			
24	2020	8	18.9	62									48.0	5.6	0.12			
24	2020	9	13.8	76									40.3	5.5	0.33			
24	2020	10	9.3	84									55.1	5.2	0.37			
24	2020	11	6.8	84									24.9	5.0	0.46			
24	2020	12	4.0	89									55.1	4.9	0.50			
24	2021	1	-1.0	89									50.0	5.2	0.20			
24	2021	2	-1.8	81		0.43		9.3				0.21	11.7	5.3	0.62	5	30.10.2020 10:00	01.02.2021 09:30
24	2021	3	4.4	69									7.6	5.8	0.75			
24	2021	4	5.2	57									21.4	5.8	1.20			
24	2021	5	10.4	69		0.31		6.9				0.14	55.7	5.6	0.09	14	01.02.2021 09:40	07.05.2021 10:00
24	2021	6	19.0	62									55.7	5.3	0.08			
24	2021	7	20.8	63									55.7	5.3	0.08			
24	2021	8	15.9	73		0.36		3.3				0.43	55.1	5.1	0.21	23	07.05.2021 10:00	12.08.2021 09:15
24	2021	9	12.7	72									27.7	5.3	0.11			
24	2021	10	9.4	80									54.7	5.6	0.42			
24	2021	11	3.9	83		0.39		7.2				0.21	22.2	5.6	0.32	23	12.08.2021 09:15	02.11.2021 11:30
24	2021	12	0.0	0									29.4	5.1	0.68			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
26	2018	11	4.1	93									46.7	4.7	0.76			
26	2018	12	0.7	94									47.5	4.7	0.33			
26	2019	1	-2.0	89									26.6	4.8	0.31			
26	2019	2	1.8	83									40.8	4.9	0.43			
26	2019	3	2.5	78									59.3	5.4	0.41			
26	2019	4	5.5	61									2.9	5.9	0.59			
26	2019	5	16.4	69									28.7	6.7	0.44			
26	2019	6	16.6	63									23.1	6.3	0.29			
26	2019	7	17.2	71									52.7	6.3	0.49			
26	2019	8	12.4	79									140.7	5.2	0.37			
26	2019	9	6.8	80									45.9	5.2	0.40			
26	2019	10	4.3	87									60.2	5.9	0.44			
26	2019	11	2.9	91									74.7	4.6	0.60			
26	2019	12	3.8	91									96.2	4.7	0.44			
26	2020	1	2.4	83									26.0	4.9	0.70			
26	2020	2	2.9	81									30.9	5.0	1.21			
26	2020	3	6.3	72									51.2	5.3	0.43			
26	2020	4	8.7	62									17.9	6.2	0.76			
26	2020	5	16.7	69									27.3	6.4	0.58			
26	2020	6	16.1	64									52.8	6.0	0.27			
26	2020	7	17.7	73									95.9	5.4	0.29			
26	2020	8	13.7	72									18.5	6.2	0.50			
26	2020	9	9.3	82									33.7	5.2	0.62			
26	2020	10	6.8	88									71.9	5.3	0.37			
26	2020	11	4.2	89									28.9	6.0	0.95			
26	2020	12	-1.3	92									84.6	4.6	0.70			
26	2021	1	-2.4	92									79.9	4.6	0.43			
26	2021	2	3.0	84		0.3		1.9				0.09	16.5	5.5	2.16	2	30.10.2020 14:00	01.02.2021 12:00
26	2021	3	4.7	73									13.6	5.2	0.93			
26	2021	4	9.1	65		0.2		1.4				0.04	18.7	6.0	0.81	3	01.02.2021 12:00	30.04.2021 12:00
26	2021	5	17.6	76									144.8	6.3	0.13			
26	2021	6	20.0	73									70.3	5.7	0.19			
26	2021	7	15.5	71									41.9	6.4	0.41			
26	2021	8	12.0	81		0.2		1.0				0.09	104.9	5.4	0.26	2	30.04.2021 12:00	10.08.2021 12:00
26	2021	9	8.9	81									26.5	5.2	0.43			
26	2021	10	3.5	86									57.4	5.0	0.40			
26	2021	11	-1.7	88		0.3		1.2				0.04	28.5	4.8	0.29	-2	10.08.2021 12:00	02.11.2021 09:00
26	2021	12	0.5	87									22.2	4.6	0.46			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
31	2018	11	14.2	61									38.1					
31	2018	12	7.3	74									3.0					
31	2019	1	6.2	60									1.0					
31	2019	2	8.6	55									4.0					
31	2019	3	11.2	47									7.7					
31	2019	4	11.0	62									63.1					
31	2019	5	17.4	42									0.5					
31	2019	6	21.9	36									0.3					
31	2019	7	26.1	35									6.6					
31	2019	8	24.6	39									6.9					
31	2019	9	20.0	50									23.0					
31	2019	10	15.5	62									29.1					
31	2019	11	8.6	75									59.0					
31	2019	12	7.8	77									130.5					
31	2020	1	6.1	75									25.4					
31	2020	2	9.8	70									1.0					
31	2020	3	10.0	66									58.1					
31	2020	4	12.3	72									108.6					
31	2020	5	18.2	56									66.9					
31	2020	6	21.1	44									16.3					
31	2020	7	27.0	34									7.1					
31	2020	8	24.4	39									55.4					
31	2020	9	19.8	50									94.6					
31	2020	10	13.0	63	1.0		18.0		52				116.3	6.3	0.33			
31	2020	11	10.4	79	1.0		31.0		30				75.2	6.2	0.35			
31	2020	12	6.2	76	1.0		19.0		41				14.2	6.3	0.32			
31	2021	1	4.0	76	2.0		32.0		40				21.9	6.3	0.30			
31	2021	2	8.9	74	1.0		20.0		45			0.12	48.7	6.7	0.93	8	06.11.2020 12:00	03.02.2021 12:00
31	2021	3	10.0	56	1.0		21.0		52				10.5	6.5	0.58			
31	2021	4	11.7	64	1.0		14.0		61				54.3	6.3	0.57			
31	2021	5	16.8	51	1.0		11.0		69			0.38	6.1	6.4	0.48	14	03.02.2021 12:00	10.05.2021 12:00
31	2021	6	21.1	49	1.0		11.0		73				22.1	6.5	0.36			
31	2021	7	24.6	37	1.0		13.0		72				3.9	6.1	0.30			
31	2021	8	25.8	37	1.0		13.0		75			0.91	1.2	6.3	0.49	17	10.05.2021 12:00	24.08.2021 12:00
31	2021	9	19.3	59	1.0		17.0		59				41.9	6.3	0.31			
31	2021	10	15.7	57	1.0		23.0		53				73.5	6.1	0.30			
31	2021	11	8.1	65	1.0		25.0		44			0.71	15.0	6.0	0.31	8	24.08.2021 12:00	18.11.2021 12:00

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
33	2018	11	13.5	69									115.9					
33	2018	12	7.9	70									23.0					
33	2019	1	5.6	60									31.3					
33	2019	2	8.2	56									7.9					
33	2019	3	10.0	52									17.8					
33	2019	4	9.3	69									114.0					
33	2019	5	17.5	47									4.2					
33	2019	6	22.1	37									0.0					
33	2019	7	26.9	37									26.5					
33	2019	8	25.9	38									2.4					
33	2019	9	21.8	49									22.1					
33	2019	10	17.4	71									29.2					
33	2019	11	8.2	89									65.8					
33	2019	12	9.0	84									91.8					
33	2020	1	6.5	85									27.6					
33	2020	2	11.4	78									1.5					
33	2020	3	9.7	81									28.9					
33	2020	4	11.8	88									0.0					
33	2020	5	18.7	72									43.1					
33	2020	6	22.1	54									2.1					
33	2020	7	30.3	39									2.8					
33	2020	8	27.7	44									27.3					
33	2020	9	21.8	57									39.5					
33	2020	10	14.5	71	0.6		1.1		76				72.7	5.7	0.32			
33	2020	11	11.9	88	0.5		1.5		62				84.8	5.9	0.24			
33	2020	12	5.8	89	0.6		1.6		64				34.8	5.7	0.39			
33	2021	1	5.8	79	0.7		1.4		72				110.6	5.5	0.37			
33	2021	2	9.3	82	0.6		0.6		74			0.13	88.6	5.9	0.67	5	09.11.2020 12:00	03.02.2021 12:00
33	2021	3	9.6	73	0.6		1.1		80				16.7	6.2	0.15			
33	2021	4	12.2	80	0.3		1.1		85				64.0	6.2	0.28			
33	2021	5	17.9	64	0.4		0.7		88			0.15	26.5	6.0	0.22	18	03.02.2021 12:00	10.05.2021 12:00
33	2021	6	22.8	57	0.5		0.9		95				15.0	6.4	0.42			
33	2021	7	27.6	41	0.8		0.7		101				4.8	5.9	0.15			
33	2021	8	29.1	39	0.7		0.7		102			0.43	6.5	6.6	0.30		10.05.2021 12:00	24.08.2021 12:00
33	2021	9	21.1	71	0.5		0.9		87				59.1	6.1	0.30			
33	2021	10	17.8	66	0.7		1.2		85				123.7	5.6	0.15			
33	2021	11	7.1	85	0.6		1.0		69			0.36	21.0	6.1	0.31		24.08.2021 12:00	18.11.2021 12:00
33	2021	12	9.1	87	0.5		0.6		68				57.7	5.6	0.21			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/cm^{2}month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
35	2018	11	7.3	89	0.1		1.3		41				117.5	5.3	0.60			
35	2018	12	-2.0	92	0.8		3.6		43				39.7	4.8	0.49			
35	2019	1	-5.1	91	0.4		3.2		55				79.0	5.0	0.45			
35	2019	2	0.1	88	0.6		3.8		62				45.5	5.1	0.42			
35	2019	3	0.7	81	0.4		2.4		73				39.6	5.4	0.42			
35	2019	4	6.3	63	0.6		2.7		82				17.5	5.0	0.21			
35	2019	5	10.2	72	0.4		2.0		64				84.1	5.6	0.21			
35	2019	6	17.9	69	0.2		1.7		68				48.1	6.0	0.14			
35	2019	7	16.8	73	0.3		1.3		50				44.7	5.8	0.26			
35	2019	8	16.6	78	0.1		1.0		51				103.2	5.7	0.26			
35	2019	9	12.0	82	0.1		0.8		45				109.0	5.6	0.30			
35	2019	10	6.7	90	0.2		1.7		42				195.6	5.3	0.46			
35	2019	11	2.2	89	0.2		2.5		36				20.5	4.8	0.29			
35	2019	12	1.9	93	0.1		2.4		45				61.0	4.9	0.72			
35	2020	1	2.3	90	0.1		1.8		56				40.6	5.2	0.51			
35	2020	2	1.0	87	0.2		1.7		63				73.1	4.9	0.86			
35	2020	3	2.0	75	0.3		1.9		64				32.5	5.1	0.63			
35	2020	4	4.4	72	0.2		1.4		70				49.4	5.4	0.40			
35	2020	5	9.1	67	0.2		1.4		66				39.0	5.8	0.35			
35	2020	6	17.1	73	0.4		1.5		59				142.8	5.4	0.08			
35	2020	7	16.4	77	0.1		0.7		46				139.6	5.8	0.23			
35	2020	8	16.7	79	0.2		0.9		43				53.1	5.0	0.22			
35	2020	9	13.6	83	0.3		0.9		45				54.0	6.1	0.67			
35	2020	10	9.0	88	0.2		1.1		39				62.9	5.5	0.29			
35	2020	11	4.6	90	0.1		1.6		40				62.1	5.4	0.72			
35	2020	12	-0.3	91	0.2		2.1		39				45.8	5.2	0.21			
35	2020	1	-3.0	93	0.9		3.4		44				79.0	4.9	0.15			
35	2021	2	-6.5	88	0.5		3.2		63				39.7	5.0	0.55			
35	2021	3	-0.2	82	0.3		2.1		70				48.4	5.3	0.37			
35	2021	4	4.4	74	0.2		1.4		70				41.8	5.3	0.37			
35	2021	5	10.3	75	0.3		1.6		69				79.5	5.4	0.10			
35	2021	6	19.6	67	0.4		1.3		66				16.8	5.9	0.16			
35	2021	7	21.1	70	0.2		1.1		62				84.0	5.8	0.09			
35	2021	8	15.5	84	0.1		1.2		54				146.5	5.1	0.18			
35	2021	9	10.2	81	0.3		1.2		53				31.5	5.5	0.10			
35	2021	10	8.1	83	0.3		1.6		62				78.5	5.3	0.57			
35	2021	11	2.6	90	0.2		1.4		57				89.3	5.1	0.46			
35	2021	12	-5.0	89	0.9		3.1		54				47.5	4.8	0.44			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
40	2018	11	14.4	74									18.9					
40	2018	12	8.2	87									73.4					
40	2019	1	4.6	84									44.5					
40	2019	2	8.0	76									32.7					
40	2019	3	10.4	72									40.4					
40	2019	4	12.6	64									14.6					
40	2019	5	14.3	68									96.4					
40	2019	6	20.5	68									51.9					
40	2019	7	23.0	53									33.3					
40	2019	8	21.5	62									61.2					
40	2019	9	18.0	66									30.5					
40	2019	10	13.8	83									62.2					
40	2019	11	8.3	87									97.4					
40	2019	12	7.1	85									67.2					
40	2020	1	6.7	87									24.2					
40	2020	2	9.3	79									75.7					
40	2020	3	9.7	56									40.4					
40	2020	4	15.7	52									10.8					
40	2020	5	17.0	52									46.4					
40	2020	6	19.2	60									56.7					
40	2020	7	21.5	55									6.0					
40	2020	8	23.1	57									26.7					
40	2020	9	19.6	61									52.5					
40	2020	10	12.9	78									81.0					
40	2020	11	10.4	79									17.7	6.1	8.15			
40	2020	12	7.1	86									118.5	5.8	0.82			
40	2021	1	5.2	82									99.2	7.5	1.80			
40	2021	2	7.4	71		0.4		23.4		30		0.11	41.2	5.8	1.51		28.10.2020 14:30	04.02.2021 14:30
40	2021	3	9.2	63									29.6	6.9	5.43			
40	2021	4	10.4	54									55.1	7.7	2.11			
40	2021	5	13.5	65		0.4		16.5		51		0.27	57.1	8.3	1.76	13	04.02.2021 14:30	11.05.2021 14:00
40	2021	6	20.7	66									186.7	7.8	0.14			
40	2021	7	20.6	67						89			97.9	7.3	0.48		11.05.2021 12:00:00	05.07.2021 12:00
40	2021	8	19.6	66		0.3		1.2		59		0.52	3.1	6.0	6.27	16	05.07.2021 16:03:00 (O3) 11.05.2021 12:00:00 (other)	11.08.2021 12:25
40	2021	9	19.3	69									130.7	6.2	0.38			
40	2021	10	13.2	76		0.3		16.6		45		0.49	15.1	6.4	1.49	4	11.08.2021 12:30	29.10.2021 14:30
40	2021	11	7.4	83									39.3					
40	2021	12	7.5	84									88.3					

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^{2}month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
41	2018	11																
41	2018	12																
41	2019	1																
41	2019	2																
41	2019	3																
41	2019	4																
41	2019	5																
41	2019	6																
41	2019	7																
41	2019	8																
41	2019	9																
41	2019	10																
41	2019	11																
41	2019	12																
41	2020	1																
41	2020	2																
41	2020	3																
41	2020	4																
41	2020	5																
41	2020	6																
41	2020	7																
41	2020	8																
41	2020	9																
41	2020	10																
41	2020	11																
41	2020	12	3.3															
41	2021	1	1.1															
41	2021	2	0.9															
41	2021	3	5.2			0.6		28.8		25		0.09				100	06.12.2020 15:00	16.03.2021 10:30
41	2021	4	6.9															
41	2021	5	12.0															
41	2021	6	20.7			0.9		12.4				0.23				92	16.03.2021 11:00	16.06.2021 10:30
41	2021	7	20.3															
41	2021	8	17.4															
41	2021	9	15.6			0.1		17.6		48		0.34				92	16.06.2021 11:00	16.09.2021 11:00
41	2021	10	10.5															
41	2021	11	6.3															
41	2021	12	2.2			0.8		21.7		31		0.17				91	16.09.2021 11:30	16.12.2021 11:30
41	2021	1	3.6															
41	2021	2	5.2															
41	2021	3	5.5							32						90	16.12.2021 11:30	16.03.2022 11:45

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
44	2018	11	0.1	80														
44	2018	12	-6.5	77														
44	2019	1	-13.3	78														
44	2019	2	-12.0	77														
44	2019	3	-6.6	71														
44	2019	4	2.1	66														
44	2019	5	4.4	67														
44	2019	6	9.0	66														
44	2019	7	11.7	73														
44	2019	8	10.9	79														
44	2019	9	8.0	78														
44	2019	10	-1.5	81														
44	2019	11	-8.1	78														
44	2019	12	-5.8	79														
44	2020	1	-11.4	76														
44	2020	2	-7.1	75														
44	2020	3	-4.1	69														
44	2020	4	-1.1	68														
44	2020	5	5.1	61														
44	2020	6	11.2	63														
44	2020	7	14.8	70														
44	2020	8	11.6	74														
44	2020	9	8.7	78														
44	2020	10	3.2	82														
44	2020	11	0.2	79	0.7		0.4						14.6	5.3	1.13			
44	2020	12	-6.3	76	2.7		0.7						11.5	4.9	1.54			
44	2021	1	-11.0	74	6.1		0.8						12.4	4.9	1.72			
44	2021	2	-12.8	74	1.0		1.0		51			0.09	39.0	5.3	4.14	-0.1	01.11.2020 12:00	01.02.2021 14:00
44	2021	3	-4.8	70	1.0		0.4						20.1	5.0	4.00			
44	2021	4	1.2	65	0.5		0.2						18.1	4.9	2.47			
44	2021	5	3.6	69	0.3		0.1					0.05	57.8	4.9	1.03	4.7	01.02.2021 12:00	03.05.2021 12:00
44	2021	6	13.5	61	-0.7		0.9		75				51.2	5.5	0.23		01.02.21 14:00	01.06.21 15:05
44	2021	7	14.4	65	0.3		0.2						69.4	5.7	0.43			
44	2021	8	11.8	74	0.4		2.3		51			0.05	73.2	5.5	0.81	6.8	01.06.2021 15:05:00 (O3) 03.05.2021 12:00:00	01.08.2021 11:20
44	2021	9	6.3	74	-0.2		0.7						35.1	5.3	1.20			
44	2021	10	1.9	78	1.3		0.3		48			0.03	82.3	5.4	0.93	5.6	01.08.2021 11:20	01.11.2021 08:30

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
45	2018	11	9.3	73									32.6					
45	2018	12	1.5	82									180.9					
45	2019	1	-3.4	88									86.5					
45	2019	2	2.8	63									42.1					
45	2019	3	3.5	69									71.9					
45	2019	4	5.6	72									64.6					
45	2019	5	6.9	76									89.9					
45	2019	6	15.9	71									152.1					
45	2019	7	17.5	64									81.4					
45	2019	8	15.9	74									97.2					
45	2019	9	12.2	74									35.3					
45	2019	10	9.1	86									161.5					
45	2019	11	2.1	90									114.2					
45	2019	12	2.3	77									116.1					
45	2020	1	1.9	73									40.8					
45	2020	2	2.7	73									116.7					
45	2020	3	2.4	74									86.1					
45	2020	4	9.6	56									43.4					
45	2020	5	10.4	71									88.2					
45	2020	6	12.6	78									157.5					
45	2020	7	16.6	63									18.1					
45	2020	8	16.5	70									111.0					
45	2020	9	13.1	77									59.3					
45	2020	10	6.1	86			3.6		61				175.8					
45	2020	11	5.4	74			4.2		62				20.4					
45	2020	12	-0.1	89			4.1		60				127.9					
45	2021	1	-2.8	90			4.7		62				176.4					
45	2021	2	2.1	75		0.3	5.6	1.7	67	59		0.11	41.0			16	20.10.2020 11:00	09.02.2021 15:30
45	2021	3	2.4	69			5.9		80				52.5					
45	2021	4	4.4	62		0.2	5.4	0.5	93	91		0.25	30.7			5	09.02.2021 15:30	28.04.2021 10:15
45	2021	5	6.8	76			2.3		86				161.3					
45	2021	6	15.0	77			3.1		95	70			196.2				28.04.2021 10:28	08.06.2021 10:10
45	2021	7	14.4	81		0.2	2.4	1.5	81	71		0.10	213.7			7	08.06.2021 10:10:00 (O3) 09.02.2021 15:30:00	28.07.2021 10:00
45	2021	8	13.5	81			2.5		77				73.6					
45	2021	9	13.2	80			4.0		88				52.6					
45	2021	10	7.5	76			3.9		73				50.7					
45	2021	11	2.1	81		0.5	4.3	9.5	61	76		0.19	49.6			5	28.07.2021 10:00	03.11.2021 10:40

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
50	2018	11	10.4	79	11.0		34.0		18				8.2					
50	2018	12	5.7	85	13.5		26.0		23				80.3					
50	2019	1	4.7	87	16.4		35.0		30				72.7					
50	2019	2	5.7	76	13.4		37.0		33				36.7					
50	2019	3	6.4	70	8.1		27.0		49				29.6					
50	2019	4	7.5	61	6.0		29.0		66				43.9					
50	2019	5	10.6	76	5.1		27.0		56				146.7					
50	2019	6	16.1	63	4.4		26.0		78				8.1					
50	2019	7	14.0	65	4.2		21.0		62				75.0					
50	2019	8	16.5	72	4.4		22.0		61				96.3					
50	2019	9	12.4	77	4.0		22.0		40				73.5					
50	2019	10	10.2	81	5.7		31.0		29				37.6					
50	2019	11	8.4	85	9.7		31.0		16				36.1					
50	2019	12	6.2	81	10.7		28.0		29				51.3					
50	2020	1	5.6	83	14.4		27.0		29				23.6					
50	2020	2	6.2	75	8.7		21.0		41				82.2					
50	2020	3	5.6	63	8.0		26.0		51				39.4					
50	2020	4	5.5	48	6.9		22.0		63				5.5					
50	2020	5	8.7	68	3.9		20.0		58				95.1					
50	2020	6	15.2	77	3.8		17.0		51				171.1					
50	2020	7	14.5	70	3.3		21.0		53				91.0					
50	2020	8	16.6	75	3.2		23.0		54				118.4					
50	2020	9	13.6	83	3.8		28.0		35				84.8					
50	2020	10	10.9	87	5.2		22.0		28				128.5					
50	2020	11	7.9	88	9.3		24.0		20				24.6					
50	2020	12	6.3	91	14.6		29.0		14				23.3					
50	2021	1	-.7	89.5	13.4		28.5		27				16.2					
50	2021	2	-.6	85.5	13.3		34.8		32				14.3					
50	2021	3	3.5	73.6	9.2		29.3		43				5.8					
50	2021	4	6.4	69.6	6.2		21.6		58				16.1					
50	2021	5	12.2	71.4	3.5		16.9		60				45.2					
50	2021	6	19.1	68.4	3.6		24.0		61				24.0					
50	2021	7	21.0	71.3	3.6		22.5		58				64.4					
50	2021	8	17.1	79.6	3.1		24.1		45				118.4					
50	2021	9	14.2	79.1	3.4		25.2		39				8.3					
50	2021	10	9.0	74.3	5.8		26.8		36				17.0					
50	2021	11	5.0	84.4	6.3		26.0		24				34.4					
50	2021	12	-.2	85.2	12.3		29.5		23				11.5					

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
51	2018	11	15.4	63			41.4		22				38.0					
51	2018	12	10.5	65			45.7		10				54.2					
51	2019	1	9.2	66			43.1		9				113.8	7.3				
51	2019	2	10.1	65			44.0		14				51.4					
51	2019	3	13.7	55	5.2		45.2		17				20.2					
51	2019	4	15.4	60	6.1		49.2		15				94.2	7.3				
51	2019	5	20.1	55	7.8		45.4		5				2.0					
51	2019	6	27.1	48	10.0		42.4		12				2.6					
51	2019	7	28.5	47	8.5		44.6		16				0.8					
51	2019	8	29.6	44	6.2		35.2		30				0.0					
51	2019	9	25.0	58	6.3		45.7		21				7.2					
51	2019	10	21.5	64	11.0		49.0		8				19.6					
51	2019	11	17.9	74	9.9		34.3		8				124.2	7.2				
51	2019	12	12.4	74	10.4		34.5		6				94.2					
51	2020	1	9.5	62	15.8		44.0		9				19.2					
51	2020	2	11.5	67	18.0		45.8		11				11.4					
51	2020	3	13.5	60	13.6		40.3		24				58.2					
51	2020	4	15.5	52	3.6		32.6		40				21.2					
51	2020	5	21.4	49	4.4		43.0		19				31.6					
51	2020	6	24.8	50	5.5		36.7		29				22.2					
51	2020	7	29.0	42	3.6		41.7		42				0.0					
51	2020	8	28.7	45	4.0		37.7		36				22.2					
51	2020	9	26.1	49	4.6		37.4		15				3.0					
51	2020	10	21.0	61	6.0		36.9		7				33.2					
51	2020	11	15.1	62	6.0		34.6		14				5.2					
51	2021	12	13.8	72	7.6		38.1		10				141.8	7.2				
51	2021	1	11.9	62	7.3		41.4		8			0.20	36.0			35	26.10.2020 10:35	26.01.2021 10:25
51	2021	2	11.9	63	4.4		48.1		13				29.0					
51	2021	3	12.2	56	4.4		39.3		19				10.0					
51	2021	4	16.0	54	4.4		42.5		19			0.04	14.8			76	26.01.2021 09:50	26.04.2021 10:15
51	2021	5	22.6	45	6.3		47.6		12				0.0					
51	2021	6	25.7	54	8.6		47.1		15				23.2					
51	2021	7	30.4	43	5.1				41			1.8	0.0			48	26.04.2021 10:30	26.07.2021 10:02
51	2021	8	30.2	47	4.8				33				0.0					
51	2021	9	24.7	55	6.2		52.8		30				0.2					
51	2021	10	18.3	64	5.5		44.7		26			1.1	127.6	7.3		53	26.07.2021 10:02	26.10.2021 11:00
51	2021	11	16.1	68	7.2		48.1		14				63.0					
51	2021	12	11.9	66	8.8		32.7		11				42.2					

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/cm²month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
53	2018	11	6.6	85	7.0		24.0		27				50.0					
53	2018	12	3.0	80	6.0		23.0		36				112.0					
53	2019	1	0.9	76	6.0		20.0		47				72.0					
53	2019	2	4.9	67	4.0		26.0		47				16.0					
53	2019	3	8.8	64	6.0		19.0		62				54.0					
53	2019	4	12.0	59	2.0		14.0		77				27.0					
53	2019	5	13.2	71	1.0		12.0		71				146.0					
53	2019	6	23.8	58	2.0		12.0		88				48.0					
53	2019	7	22.5	57	1.0		11.0		85				60.0					
53	2019	8	22.6	64	2.0		13.0		75				52.0					
53	2019	9	16.7	69	1.0		14.0		58				62.0					
53	2019	10	12.0	79	0.0		21.0		33				26.0					
53	2019	11	7.9	83	1.0		20.0		34				48.0					
53	2019	12	3.6	79	1.0		24.0		34				64.0					
53	2020	1	1.4	84	1.0		28.0		30				19.0					
53	2020	2	6.6	65	1.0		16.0		61				52.0					
53	2020	3	7.3	58	1.0		15.0		67				21.0					
53	2020	4	12.5	46	2.0		14.0		83				9.0					
53	2020	5	14.5	60	2.0		10.0		78				83.0					
53	2020	6	19.0	69	2.0		7.0		72				94.0					
53	2020	7	21.6	60	1.0		9.0		76				77.0					
53	2020	8	21.9	67	1.0		11.0		77				99.0					
53	2020	9	16.9	72	2.0		15.0		63				75.0					
53	2020	10	11.2	82	0.0		16.0		44				45.0					
53	2020	11	6.1	84	1.0		22.0		31				17.0					
53	2020	12	3.3	86	1.0		19.0		29				23.0					
53	2021	1	1.6	79	1.0		20.0		41				44.0					
53	2021	2	2.5	79	1.0	0.7	24.0	17.3	41	31		0.20	22.0			3	08.11.2020 10:05	05.02.2021 10:30
53	2021	3	5.7	63	1.0		18.0		59				19.0					
53	2021	4	9.0	59	1.0		11.0		76				35.0					
53	2021	5	13.8	64	2.0	0.5	9.0	9.2	74	59		0.36	71.0			5	05.02.2021 10:35	07.05.2021 11:10
53	2021	6	22.3	54	1.0		10.0		90	66			9.0				07.05.21 11:10	01.06.21 11:11
53	2021	7	22.8	59	1.0		7.0		84				154.0					
53	2021	8	19.5	69	1.0	0.4	8.0	3.6	67	86		0.66	93.0			9	01.06.2021 11:11:00 (O3) 07.05.2021 11:10:00	11.08.2021 10:45
53	2021	9	16.9	70	1.0		14.0		60				20.0					
53	2021	10	10.4	69	2.0		18.0		46				19.0					
53	2021	11	5.8	80	2.0		17.0		34				46.0					
53	2021	12	3.1	80	1.0	0.7	18.0	10.0	34	53		0.40	51.0			9	11.08.2021 10:45	15.12.2021 11:00

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/cm²month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
57	2018	10	6.0	90									35.9					
57	2018	11	2.4	92									15.1					
57	2018	12	-2.4	93									17.3					
57	2019	1	-7.4	91									47.9					
57	2019	2	-1.0	85									33.4					
57	2019	3	-0.8	80									27.6					
57	2019	4	6.4	58									2.9					
57	2019	5	10.2	68									69.1					
57	2019	6	17.1	67									31.1					
57	2019	7	16.7	70									27.2					
57	2019	8	16.1	77									56.5					
57	2019	9	10.3	88									67.4					
57	2019	10	4.2	93									52.3					
57	2019	11	0.7	96									78.1					
57	2019	12	0.5	97									64.3					
57	2020	1	1.2	91									35.1					
57	2020	2	-0.5	90									44.3					
57	2020	3	1.3	75									34.5					
57	2020	4	4.0	64									27.1					
57	2020	5	9.1	59									28.5					
57	2020	6	18.4	61									95.5					
57	2020	7	15.6	76									112.2					
57	2020	8	16.2	75									27.9					
57	2020	9	12.5	83									38.2					
57	2020	10	7.6	89									79.1					
57	2020	11	3.9	89									69.8	5.4	0.50			
57	2020	12	0.3	92									51.3	4.6	0.50			
57	2020	1	-5.1	92		0.4		5.9		36	0.19		51.8	4.7	0.80	2	02.11.2020 11:15	25.01.2021 12:00
57	2021	2	-8.4	87									17.1	5.4	0.80			
57	2021	3	-0.9	78									18.9	4.7	1.70			
57	2021	4	4.2	69									35.5	5.7	1.50			
57	2021	5	10.2	68		0.3		5.8		61	0.14		84.2	6.9	1.00	11	25.01.2021 13:00	04.05.2021 13:00
57	2021	6	19.5	63						61			37.3	6.3	0.30		04.05.21 13:00	09.06.21 10:00
57	2021	7	20.7	62									21.8	6.2	0.40			
57	2021	8	15.1	80		0.3		2.4		68	0.23		120.9	5.5	0.40	10	04.05.2021 13:00:00	04.08.2021 15:00
57	2021	9	9.0	81									21.3	5.4	0.40			
57	2021	10	7.5	86									85.1	5.2	0.40			
57	2021	11	0.8	91		0.3		3.7		48	0.10		38.3			6	04.08.2021 15:00	04.11.2021 12:00
57	2021	12	-7.0	89									19.0					

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
58	2018	11																
58	2018	12																
58	2019	1																
58	2019	2																
58	2019	3																
58	2019	4																
58	2019	5																
58	2019	6																
58	2019	7																
58	2019	8																
58	2019	9																
58	2019	10																
58	2019	11																
58	2019	12																
58	2020	1																
58	2020	2																
58	2020	3																
58	2020	4																
58	2020	5																
58	2020	6																
58	2020	7																
58	2020	8																
58	2020	9																
58	2020	10																
58	2020	11	9.9															
58	2020	12	3.4															
58	2021	1	5.8									0.14				8	05.10.2020 15:40	26.01.2021 10:30
58	2021	2	6.8															
58	2021	3	13.5															
58	2021	4	16.7															
58	2021	5	24.9									0.29					26.01.2021 10:27	03.05.2021 14:37
58	2021	6	28.2															
58	2021	7	27.4															
58	2021	8	28.8															
58	2021	9	25.3									0.46				3	03.05.2021 14:37	22.09.2021 17:03
58	2021	10	21.2															
58	2021	11	16.4															
58	2021	12	12.7															
58	2022	1	10.8															
58	2022	2	9.9									0.13				4	22.09.2021 17:06	16.02.2022 11:30

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
59	2018	11	6.0	74	0.0		70.2		24				4.9	7.0	2.30			
59	2018	12	0.2	89	0.0		76.7		16				72.9	7.1	<2			
59	2019	1	-2.9	85	0.0		88.1		25				78.6	6.8	<2			
59	2019	2	1.9	77	0.0		76.1		29				27.1	5.9	<2			
59	2019	3	6.2	72	0.0		37.6		50				48.5	6.0	2.23			
59	2019	4	11.3	58	0.0		24.5		71				23.8	6.4	2.11			
59	2019	5	11.5	79	0.0		24.0		54				155.0	5.2	2.22			
59	2019	6	22.1	64	0.0		20.3		67				53.1	6.9	2.13			
59	2019	7	19.2	66	0.0		20.3		65				81.8	7.8	2.01			
59	2019	8	20.2	74	9.1		12.9		54				66.3	6.0	<2			
59	2019	9	13.7	80	10.5		16.0		35				81.1	6.0	<2			
59	2019	10	10.0	82	12.5		23.0		25				42.9	6.1	<2			
59	2019	11	7.8	83	6.7		21.4		27				72.1	7.3	2.85			
59	2019	12	1.6	88	under limit		26.0		22				45.0	6.6	<2			
59	2020	1	-0.8	93	under limit		31.1		18				20.3	6.0	<2			
59	2020	2	3.5	82	under limit		23.3		37				76.5	7.1	<2			
59	2020	3	4.7	67	under limit		18.0		47				30.9	6.2	2.55			
59	2020	4	9.5	50	3.0		15.0		52				12.0	7.0	<2			
59	2020	5	11.3	73	2.5		10.0		48				89.8	6.7	2.50			
59	2020	6	17.9	81	2.6		9.4		44				102.8	7.0	<2			
59	2020	7	18.6	77	2.5		10.0		45				91.5	7.0	<2			
59	2020	8	19.8	78	4.5		9.7		47				86.8	6.5	2.74			
59	2020	9	14.6	82	6.5		13.1		30				91.7	7.3	2.15			
59	2020	10	10.1	81	6.0		13.1		26				157.5	7.2	3.12			
59	2020	11	4.3	82	2.2		17.0		16				19.8	6.7	2.33			
59	2020	12	3.0	80	4.5		15.6		21				37.4	5.9	<2			
59	2021	1	-0.8	80	2.9		26.8		22				41.4	6.5	<2			
59	2021	2	-0.1	80	3.5		29.1		37				30.9	6.9	<2			
59	2021	3	2.9	70	2.2		22.2		56				20.6	7.1	2.48			
59	2021	4	6.6	65	3.3		14.4		69				38.4	6.4	2.22			
59	2021	5	12.1	70	2.0		12.9		70				127.6	7.0	2.81			
59	2021	6	20.5	59	4.0		11.2		86				29.2	6.5	3.09			
59	2021	7	22.0	64	4.0		11.1		87				112.6	7.0	<2			
59	2021	8	17.3	76	3.0		12.2		61				224.9	7.0	<2			
59	2021	9	14.1	76	3.0		15.8		61				44.3	6.9	3.49			
59	2021	10	8.5	72	6.0		21.8		59				17.2	6.4	2.09			
59	2021	11	4.8	80	3.0		21.9		44				25.3	5.5	<2			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^2month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
60	2018	12	9.0	55														
60	2019	1	6.3	58														
60	2019	2	10.1	51														
60	2019	3	12.9	54														
60	2019	4	15.6	57														
60	2019	5	16.3	65														
60	2019	6	26.5	51														
60	2019	7	27.0	49														
60	2019	8	28.2	47														
60	2019	9	22.8	54														
60	2019	10	18.8	61														
60	2019	11	15.6	71														
60	2019	12	11.1	60														
60	2020	1	9.7	52														
60	2020	2	11.0	54														
60	2020	3	11.8	51														
60	2020	4	15.9	46														
60	2020	5	19.8	48														
60	2020	6	23.1	55														
60	2020	7	26.4	47														
60	2020	8	27.7	49														
60	2020	9	23.6	54														
60	2020	10	17.0	65	3.9		4.5						84.6	6.4	3.31			
60	2020	11	13.7	59	0.6		20.3						61.2	6.3	2.23			
60	2020	12	11.3	70	0.2		19.4						296.9	6.2	8.41			
60	2021	1	7.7	62	0.1	0.9	15.3	5.4		59		0.27	107.8	6.3	6.12	17	29.10.2020 14:30	29.01.2021 14:30
60	2021	2	10.3	64	1.4		23.4						47.4	6.8	4.37			
60	2021	3	10.5	49	3.8		19.1						29.3	6.2	2.39			
60	2021	4	12.9	54	4.8	0.5	15.0	4.2		80		0.35	61.2	6.3	3.14	17	29.01.2021 14:30	29.04.2021 14:30
60	2021	5	19.2	52	4.1		13.0						78.7	6.5	1.79			
60	2021	6	26.0	46	3.1	1.6	20.9	5.4				0.61	4.3	6.7	0.55	14	29.04.2021 14:35	29.07.2021 14:40
60	2021	7	28.6	43	5.7		18.8						15.8	6.2	2.75			
60	2021	8	27.3	46	2.9		19.1						121.2	6.5	1.27			
60	2021	9	22.9	51	2.6		20.9						22.3	6.6	2.22			
60	2021	10	16.4	55	3.3	0.4	15.3	9.3		86		0.73	64.7	6.3	0.16	19	29.07.2021 14:40	29.10.2021 14:40
60	2021	11	14.5	70	2.5		21.0						222.6	6.2	3.64			

Site no	Year	Month	Temp (°C)	RH (%)	SO2 (µg/m3)	IVL-SO2 (µg/m3)	NO2 (µg/m3)	IVL-NO2 (µg/m3)	O3 (µg/m3)	IVL-O3 (µg/m3)	HNO3 (µg/m3)	IVL-HNO3 (µg/m3)	Prec. (mm)	pH	Cl- (mgCl/l)	IVL-Particle depositon (µg/ cm^{2}month)	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
61	2018	12	2.8	80														
61	2019	1	1.5	72														
61	2019	2	4.8	69														
61	2019	3	9.5	61														
61	2019	4	12.4	65														
61	2019	5	13.7	72														
61	2019	6	23.8	65														
61	2019	7	22.2	67														
61	2019	8	23.5	68														
61	2019	9	17.3	74														
61	2019	10	13.2	79														
61	2019	11	9.2	87														
61	2019	12	4.6	80														
61	2020	1	1.0	84														
61	2020	2	7.6	65														
61	2020	3	7.8	63														
61	2020	4	13.2	50														
61	2020	5	15.7	62														
61	2020	6	20,3,	67														
61	2020	7	21.8	68														
61	2020	8	22.9	71														
61	2020	9	18.1	73														
61	2020	10	12.6	82	3.4		17.2		25				159.3	6.3	0.31			
61	2020	11	5.7	86	3.6		26.2		17				39.5	6.3	0.15			
61	2020	12	4.1	87	3.6		23.6		18				89.3	5.8	0.66			
61	2021	1	2.8	82	3.5		31.7		25				70.2	6.0	0.84			
61	2021	2	5.7	73	3.3	0.8	34.4	23.1	34	22		0.20	29.0	6.6	0.84	8	20.11.2020 14:00	20.02.2021 14:00
61	2021	3	6.8	61	3.1		31.7		49				36.1	6.6	0.59			
61	2021	4	9.8	65	3.1		21.8		59				68.7	6.3	0.65			
61	2021	5	14.7	68	3.2	0.3	21.7	13.6	54	59		0.20	124.0	6.6	0.70	12	20.02.2021 14:05	20.05.2021 14:05
61	2021	6	23.3	56	3.4		27.4		63			0.63	13.2	6.6	0.55		20.05.2021 14:10	20.06.2021 14:10
61	2021	7	24.0	62	3.5		26.7		61				74.5	6.7	0.82			
61	2021	8	21.4	66	3.7	0.3	23.0	7.9	53	58		>19.0	62.7	6.6	0.50	763	20.05.2021 14:10	20.08.2021 14:10
61	2021	9	17.9	67	4.1		33.2		46				34.6	6.5	0.40			
61	2021	10	10.1	85	4.5		31.1		30				86.2	6.1	0.28			
61	2021	11	6.5	84	4.6	0.3	32.1	13.8	25	38		0.81	89.2	5.5	1.19	13	07.09.2021 00:00	20.11.2021 14:20

Table A.2: Optional data

			Optional														
	Sampling		Ions in precipitation								Ions in particle deposition (IVL)			Particles	Total global irradiation		
	Period		Conductivity	SO42-	NO3-	NH4+	Na+	Ca2+	Mg2+	K+	Cl-	NO3-	SO42-	conc. PM10	(285 to 3000 nm)		
Site no	Year	Month	mS/cm	mgS/l	mgN/l	mgN/l	mgNa/l	mgCa/l	mgMg/l	mgK/l	µg/cm²month	µg/cm²month	µg/cm²month	mg/m³	Wh/m²	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
01	2018	11	55	79.90	1.70									39.2			
01	2018	12	17		0.70									20.4			
01	2019	1	51	2.06	1.76									23.5			
01	2019	2	28	3.66	0.70									38.7			
01	2019	3	32	8.23	12.60									20.0			
01	2019	4	30	4.89										28.2			
01	2019	5	17	0.10	0.76									18.6			
01	2019	6	23	19.34	0.29									21.7			
01	2019	7	19	4.30	0.31									20.4			
01	2019	8	8	2.67	0.29									19.3			
01	2019	9	20	9.78	0.60									19.4			
01	2019	10	26	19.48	0.99									24.6			
01	2019	11	19	7.77	0.31									23.3			
01	2019	12	40	34.63	1.87									23.9			
01	2020	1	70	12.34	1.89									29.9			
01	2020	2	19	3.70	0.42									12.9			
01	2020	3	15	2.18	0.80									24.6			
01	2020	4	66	13.76	1.88									29.2			
01	2020	5	10	1.75	0.40									15.2			
01	2020	6	11	10.70	0.35									15.3			
01	2020	7	11	3.15	0.09									15.7			
01	2020	8	10	3.65	0.50									19.1	121196		
01	2020	9	28	11.30	0.41									21.0	79410		
01	2020	10	6	12.60	1.54									17.2	37568		
01	2020	11	35	8.41	0.39									23.6	18591		
01	2020	12	20	14.00	1.05									19.1	10636		
01	2021	1	15	47.47	0.65						0.23	0.29	0.17	18.5		29.10.2020 12:00	01.01.2021 12:00
01	2021	2	34	10.91	0.97									33.8			
01	2021	3	26	2.74	0.85									27.9			
01	2021	4	19	28.00	0.60						0.11	0.27	0.16	23.2		01.01.2021 12:00	13.04.2021 12:00
01	2021	5	13	10.08	0.49									14.5			
01	2021	6	17	12.71	0.99									23.0			
01	2021	7	13	2.88	0.47						0.02	0.08	0.04	16.5		13.04.2021 12:00	01.07.2021 00:00
01	2021	8	22	2.61	0.27									15.3			
01	2021	9	33	11.80	0.19									21.8			
01	2021	10	58	15.77	0.18									24.9			
01	2021	11															

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
03	2018	11	100	54.30	2.10									43.4			
03	2018	12	25	9.40	0.50									26.9			
03	2019	1	35	4.11	0.74									23.0			
03	2019	2	n	n	n									35.3			
03	2019	3	34	5.66	0.89									17.4			
03	2019	4	132	38.26	1.01									31.0			
03	2019	5	154	14.40	0.78									18.2			
03	2019	6	33	8.50	0.44									22.2			
03	2019	7	108	22.45	0.38									21.3			
03	2019	8	41	11.31	0.92									22.6			
03	2019	9	41	5.86	0.15									17.4			
03	2019	10	30	16.54	0.97									23.8			
03	2019	11	31	18.75	1.27									23.9			
03	2019	12	40	8.20	0.89									25.9			
03	2020	1	53	13.90	1.13									34.2			
03	2020	2	23	4.01	0.50									13.1			
03	2020	3	60	14.69	1.89									23.8			
03	2020	4	697	122.00	8.02									28.9			
03	2020	5	257	30.50	0.69									16.0			
03	2020	6	40	2.98	0.13									19.5			
03	2020	7	35	26.50	0.73									19.3			
03	2020	8	23	11.80	0.79									25.1			
03	2020	9	17	9.20	0.63									22.3			
03	2020	10	30	28.00	1.21									20.0			
03	2020	11	116	23.70	0.96									22.7			
03	2020	12	41	49.10	1.71									23.7			
03	2021	1	22	76.92	0.49						0.03	0.12	0.25	21.6		28.10.2020 12:00	01.01.2021 12:00
03	2021	2	35	9.65	0.99									37.8			
03	2021	3	106	57.60	2.25									22.2			
03	2021	4									0.20	0.17	0.55	18.4		01.02.2021 12:00	25.04.2021 12:00
03	2021	5	75	14.11	0.47									10.3			
03	2021	6	110	13.20	2.19									24.6			
03	2021	7	25	5.25	1.45									16.7			
03	2021	8	27	6.03	0.72									14.3			
03	2021	9	139	17.74	2.40									20.4			
03	2021	10	46	16.25	0.61									28.1			
03	2021	11									0.04	0.19	0.48			03.07.2021 16:20	11.11.2021 14:00

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
10	2018	11	50	0.42	0.20	0.34	0.10	0.49	0.02	0.05				21.9	17490		
10	2018	12	52	1.26	0.25	0.60	1.19	1.02	0.27	1.31				17.2	10710		
10	2019	1	41	0.98	0.55	1.22	1.95	0.64	0.25	0.13				21.7	12350		
10	2019	2	22	0.75	0.32	0.68	0.54	0.77	0.02	0.08				27.4	34000		
10	2019	3	53	1.13	0.30	1.02	1.40	1.18	0.18	0.14				20.2	51070		
10	2019	4	39	0.86	0.48	0.69	0.53	2.66	0.19	0.64				23.8	98600		
10	2019	5	39	0.92	0.67	1.54	0.69	1.85	0.09	0.16				16.1	103290		
10	2019	6	33	0.82	0.44	0.38	0.61	3.46	0.25	1.33				17.1	143180		
10	2019	7	40	0.78	0.52	1.23	0.50	2.59	0.14	0.22				17.4	119560		
10	2019	8	40	1.01	0.37	0.85	1.01	2.72	0.18	0.32				18.2	106700		
10	2019	9	50	1.42	0.30	2.56	0.83	1.59	0.14	0.31				14.9	66520		
10	2019	10	33	0.90	0.24	0.57	0.67	1.39	0.07	0.11				16.2	29950		
10	2019	11	30	0.86	0.26	0.68	0.64	1.03	0.05	0.10				19.3	14550		
10	2019	12	28	0.62	0.24	0.65	1.12	0.70	0.16	0.24				19.8	8920		
10	2020	1	55	2.08	0.36	1.87	0.88	1.21	0.17	0.09				20.0	11190		
10	2020	2	43	0.98	0.21	0.76	1.44	0.91	0.25	0.11				17.0	21840		
10	2020	3	34	0.74	0.29	0.68	0.64	1.15	0.13	0.10				16.0	67750		
10	2020	4	156	1.27	0.49	4.53	0.47	2.48	0.30	1.78				22.0	115390		
10	2020	5	37	0.97	0.39	1.24	0.66	1.81	0.19	0.21				14.0	131320		
10	2020	6	31	0.70	0.45	1.26	0.30	1.36	0.15	0.67				15.0	123740		
10	2020	7	33	1.00	0.55	0.99	0.46	1.66	0.23	0.41				12.0	107520		
10	2020	8	55	1.07	0.77	1.06	0.97	4.05	0.41	1.26				17.0	99870		
10	2020	9	12	0.81	0.25	0.67	0.23	1.75	0.12	0.59				18.0	73020		
10	2020	10	31	1.18	0.30	0.75	0.68	2.03	0.21	1.17				13.0	26460		
10	2020	11	44	1.54	0.43	0.93	0.72	2.14	0.29	1.15				22.0	15170		
10	2020	12	25	1.07	0.36	0.85	0.35	1.06	0.10	0.12				14.0	7680		
10	2021	1	31	0.76	0.29	0.71	0.71	0.81	0.13	0.11	0.08	0.11	0.49	16.0	10250	06.10.2020	06.01.2021
10	2021	2	46	0.80	0.37	0.88	0.93	1.17	0.10	0.10				23.0	25920		
10	2021	3	43	1.13	0.39	1.83	1.41	1.34	0.23	0.15	0.12	0.11	0.42	22.0	61970	06.01.2021	31.03.2021
10	2021	4	28	0.75	0.32	0.92	1.30	0.88	0.19	0.11				18.0	89380		
10	2021	5	47	0.94	0.38	1.24	0.59	1.43	0.21	0.71				12.0	99110		
10	2021	6	22	0.55	0.30	1.07	0.20	0.86	0.07	0.14	0.01	0.13	0.16	17.0	124640	31.03.2021	23.06.2021
10	2021	7	29	0.64	0.30	1.19	0.21	1.00	0.09	0.13				15.0	96180		
10	2021	8	42	0.85	0.30	1.57	0.60	1.28	0.15	0.38				12.0	80140		
10	2021	9	29	0.68	0.22	0.48	0.44	1.48	0.11	0.12	0.03	0.18	0.19	15.0	69570	23.06.2021	15.09.2021
10	2021	10	51	1.12	0.22	0.80	0.71	1.71	0.22	0.38				14.0	34200		
10	2021	11	50	0.88	0.36	0.92	0.96	1.29	0.21	0.35				19.7	15750		
10	2021	12	49	1.49	0.53	1.73	1.06	1.16	0.20	0.14				15.0	9580		

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
13	2018	11												0.0			
13	2018	12												0.0			
13	2019	1												0.0			
13	2019	2												0.0			
13	2019	3												0.0			
13	2019	4												0.0			
13	2019	5												0.0			
13	2019	6												0.0			
13	2019	7												0.0			
13	2019	8												0.0			
13	2019	9												0.0			
13	2019	10												0.0			
13	2019	11												0.0			
13	2019	12												0.0			
13	2020	1												0.0			
13	2020	2												0.0			
13	2020	3												0.0			
13	2020	4												0.0			
13	2020	5												0.0			
13	2020	6												0.0			
13	2020	7												0.0			
13	2020	8												0.0			
13	2020	9												0.0			
13	2020	10												0.0			
13	2020	11												0.0			
13	2020	12												0.0			
13	2021	1												0.0			
13	2021	2												0.0			
13	2021	3												0.0			
13	2021	4												0.0			
13	2021	5												0.0			
13	2021	6									1.04	0.91	0.33	0.0		23.03.2021	16.06.2021
13	2021	7												0.0			
13	2021	8												0.0			
13	2021	9									1.46	1.26	0.50	0.0		16.06.2021	22.09.2021
13	2021	10												0.0			
13	2021	11												0.0			
13	2021	12									4.58	0.35	0.86	0.0		22.09.2021	16.12.2021

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
14	2018	11															
14	2018	12															
14	2019	1															
14	2019	2															
14	2019	3															
14	2019	4															
14	2019	5															
14	2019	6															
14	2019	7															
14	2019	8															
14	2019	9															
14	2019	10															
14	2019	11															
14	2019	12															
14	2020	1															
14	2020	2															
14	2020	3															
14	2020	4															
14	2020	5															
14	2020	6															
14	2020	7															
14	2020	8															
14	2020	9															
14	2020	10															
14	2020	11															
14	2021	12															
14	2021	1															
14	2021	2															
14	2021	3									6.96	0.97	2.17			14.12.2020 15:15	22.03.2021 12:35
14	2021	4															
14	2021	5															
14	2021	6									0.96	0.58	0.25			22.03.2021 12:40	17.06.2021 13:35
14	2021	7															
14	2021	8															
14	2021	9									1.29	1.05	0.44			17.06.2021 13:40	21.09.2021 14:24
14	2021	10															
14	2021	11															
14	2021	12									2.34	0.41	0.45			21.09.2021 14:34	16.12.2021 14:15

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
15	2018	11												28.7			
15	2018	12												50.6			
15	2019	1												52.5			
15	2019	2												56.8			
15	2019	3												31.5			
15	2019	4												20.9			
15	2019	5												12.7			
15	2019	6												26.0			
15	2019	7												20.4			
15	2019	8												17.3			
15	2019	9												22.0			
15	2019	10												29.1			
15	2019	11												23.3			
15	2019	12												37.0			
15	2020	1												67.7			
15	2020	2												43.6			
15	2020	3												30.3			
15	2020	4												23.7			
15	2020	5												14.5			
15	2020	6												12.4			
15	2020	7												17.7			
15	2020	8												19.0			
15	2020	9												23.7			
15	2020	10												31.3			
15	2020	11												58.0			
15	2021	12												35.8			
15	2021	1												38.2			
15	2021	2												51.4			
15	2021	3									0.01	0.01	0.01	38.8		17.12.2020 11:45	24.03.2021 10:50
15	2021	4												21.8			
15	2021	5												12.4			
15	2021	6									0.08	0.84	0.30	20.7		24.03.2021 10:52	23.06.2021 10:45
15	2021	7												17.6			
15	2021	8												17.6			
15	2021	9									0.01	0.31	0.04	24.5		23.06.2021 10:50	23.09.2021 10:30
15	2021	10												37.1			
15	2021	11												25.7			
15	2021	12									0.09	0.39	0.19	49.0		23.09.2021 10:34	09.12.2021 10:21

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
16	2018	11												34.3			
16	2018	12												60.2			
16	2019	1												58.1			
16	2019	2												68.6			
16	2019	3												40.7			
16	2019	4												30.3			
16	2019	5												14.1			
16	2019	6												29.4			
16	2019	7												22.3			
16	2019	8												24.4			
16	2019	9												20.2			
16	2019	10												36.6			
16	2019	11												23.1			
16	2019	12												48.0			
16	2020	1												86.2			
16	2020	2												59.5			
16	2020	3												41.5			
16	2020	4												24.4			
16	2020	5												15.4			
16	2020	6												15.5			
16	2020	7												17.4			
16	2020	8												19.0			
16	2020	9												21.5			
16	2020	10												40.3			
16	2020	11												53.8			
16	2021	12												46.6			
16	2021	1												50.0			
16	2021	2												57.5			
16	2021	3												41.6			
16	2021	4												21.3			
16	2021	5												13.5			
16	2021	6												27.9			
16	2021	7												21.4			
16	2021	8												18.9			
16	2021	9												26.2			
16	2021	10												34.6			
16	2021	11												31.0			

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
21	2018	11															
21	2018	12															
21	2019	1															
21	2019	2															
21	2019	3															
21	2019	4															
21	2019	5															
21	2019	6															
21	2019	7															
21	2019	8															
21	2019	9															
21	2019	10															
21	2019	11															
21	2019	12															
21	2020	1															
21	2020	2															
21	2020	3															
21	2020	4															
21	2020	5															
21	2020	6															
21	2020	7															
21	2020	8															
21	2020	9															
21	2020	10												16.73			
21	2020	11	23	0.25	0.36	0.33	1.07	2.05	0.24	0.66				18.62			
21	2020	12	10	0.05	0.30	0.23	0.30	0.12	0.03	0.05				9.11			
21	2021	1	30	0.25	0.33	0.24	3.48	0.32	0.29	0.17	0.20	0.09	0.07	18.10		22.10.2020 12:10	22.01.2021 14:00
21	2021	2	50	0.34	0.74	0.69	5.58	2.39	0.23	0.31				21.40			
21	2021	3	26	0.15	0.37	0.62	3.16	0.51	0.10	0.52				19.28			
21	2021	4	27	0.43	0.68	1.14	1.12	1.53	0.26	0.71	0.41	0.16	0.05	14.69		22.01.2021 14:24	23.04.2021 09:30
21	2021	5	17	0.26	0.31	0.62	0.19	0.47	0.05	0.20				13.95			
21	2021	6												19.57			
21	2021	7	8	0.21	0.23	0.12	0.25	0.65	0.09	0.82	0.06	0.13	0.04	18.52		23.04.2021 09:30	21.07.2021 21:50
21	2021	8	9	0.19	0.15	0.10	0.37	0.78	0.07	0.23				14.61			
21	2021	9	11	0.20	0.23	0.25	0.35	0.61	0.08	0.41				10.21			
21	2021	10	15	0.18	0.18	0.16	0.74	1.16	0.21	0.30				11.27			
21	2021	11									0.16	0.15	0.05	16.96		21.07.2021 21:55	02.11.2021 11:00
21	2021	12												16.22			

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
23	2018	11															
23	2018	12															
23	2019	1															
23	2019	2															
23	2019	3															
23	2019	4															
23	2019	5															
23	2019	6															
23	2019	7															
23	2019	8															
23	2019	9															
23	2019	10															
23	2019	11															
23	2019	12															
23	2020	1															
23	2020	2															
23	2020	3															
23	2020	4															
23	2020	5															
23	2020	6															
23	2020	7															
23	2020	8															
23	2020	9															
23	2020	10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00				0.0			
23	2020	11	16	0.27	0.34	0.34	1.09	0.15	0.13	0.07				3.9			
23	2020	12	23	0.36	0.39	0.32	1.44	0.12	0.18	0.09				2.4			
23	2021	1	45	0.53	0.20	0.19	6.10	0.31	0.69	0.29	1.07	0.06	0.17	2.3			
23	2021	2	16	0.23	0.42	0.36	0.90	0.19	0.10	0.05				3.0			
23	2021	3	16	0.23	0.48	0.66	0.98	0.17	0.14	0.14				3.9			
23	2021	4	12	0.16	0.20	0.13	1.03	0.24	0.14	0.09	0.39	0.17	0.12	2.8			
23	2021	5	9	0.18	0.27	0.38	0.29	0.13	0.04	0.06				4.8			
23	2021	6	13	0.26	0.38	0.40	0.13	0.30	0.04	0.10				6.4			
23	2021	7	12	0.24	0.26	0.18	0.47	0.29	0.07	0.10	0.09	0.12	0.07	5.7			
23	2021	8	10	0.18	0.21	0.15	0.62	0.30	0.09	0.06				3.9			
23	2021	9	13	0.37	0.36	0.42	0.44	0.21	0.06	0.06				4.7			
23	2021	10	17	0.23	0.30	0.20	1.37	0.16	0.15	0.07				4.9			
23	2021	11									0.66	0.11	0.13				

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
24	2018	11															
24	2018	12															
24	2019	1															
24	2019	2															
24	2019	3															
24	2019	4															
24	2019	5															
24	2019	6															
24	2019	7															
24	2019	8															
24	2019	9															
24	2019	10															
24	2019	11															
24	2019	12															
24	2020	1															
24	2020	2															
24	2020	3															
24	2020	4															
24	2020	5															
24	2020	6															
24	2020	7															
24	2020	8															
24	2020	9															
24	2020	10															
24	2020	11															
24	2020	12															
24	2021	1															
24	2021	2									0.76	0.12	0.14			30.10.2020 10:00	01.02.2021 09:30
24	2021	3															
24	2021	4															
24	2021	5									0.20	0.26	0.14			01.02.2021 09:40	07.05.2021 10:00
24	2021	6															
24	2021	7															
24	2021	8									0.08	0.44	0.16			07.05.2021 10:00	12.08.2021 09:15
24	2021	9															
24	2021	10															
24	2021	11									0.41	0.62	0.49			12.08.2021 09:15	02.11.2021 11:30
24	2021	12															

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
26	2018	11															
26	2018	12															
26	2019	1															
26	2019	2															
26	2019	3															
26	2019	4															
26	2019	5															
26	2019	6															
26	2019	7															
26	2019	8															
26	2019	9															
26	2019	10															
26	2019	11															
26	2019	12															
26	2020	1															
26	2020	2															
26	2020	3															
26	2020	4															
26	2020	5															
26	2020	6															
26	2020	7															
26	2020	8															
26	2020	9															
26	2020	10															
26	2020	11															
26	2020	12															
26	2021	1															
26	2021	2									0.05	0.07	0.03			30.10.2020 14:00	01.02.2021 12:00
26	2021	3															
26	2021	4									0.02	0.08	0.03			01.02.2021 12:00	30.04.2021 12:00
26	2021	5															
26	2021	6															
26	2021	7															
26	2021	8									0.02	0.04	0.02			30.04.2021 12:00	10.08.2021 12:00
26	2021	9															
26	2021	10															
26	2021	11									0.02	0.08	0.02			10.08.2021 12:00	02.11.2021 09:00
26	2021	12															

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
31	2018	11															
31	2018	12															
31	2019	1															
31	2019	2															
31	2019	3															
31	2019	4															
31	2019	5															
31	2019	6															
31	2019	7															
31	2019	8															
31	2019	9															
31	2019	10															
31	2019	11															
31	2019	12															
31	2020	1															
31	2020	2															
31	2020	3															
31	2020	4															
31	2020	5															
31	2020	6															
31	2020	7															
31	2020	8															
31	2020	9															
31	2020	10												12.0	106392		
31	2020	11												19.0	54000		
31	2020	12												10.0	46872		
31	2021	1												15.0	59520		
31	2021	2	20	0.49	0.30						0.21	0.10	0.10	25.0	78648	06.11.2020 12:00	03.02.2021 12:00
31	2021	3	15	0.23	0.39									24.0	137640		
31	2021	4	12	0.20	0.23									11.0	140400		
31	2021	5	7	0.12	0.07						0.06	0.59	0.20	11.0	209808	03.02.2021 12:00	10.05.2021 12:00
31	2021	6	15	2.70	0.26									14.0	216000		
31	2021	7	7	0.10	0.08									16.0	243288		
31	2021	8	25	0.50	0.84						0.02	0.23	0.08	23.0	217992	10.05.2021 12:00	24.08.2021 12:00
31	2021	9	6	0.14	0.16									13.0	135360		
31	2021	10	6	0.10	0.07									13.0	109368		
31	2021	11	7	0.12	0.15						0.03	0.37	0.14	10.0	69840	24.08.2021 12:00	18.11.2021 12:00

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
33	2018	11															
33	2018	12															
33	2019	1															
33	2019	2															
33	2019	3															
33	2019	4															
33	2019	5															
33	2019	6															
33	2019	7															
33	2019	8															
33	2019	9															
33	2019	10															
33	2019	11															
33	2019	12															
33	2020	1															
33	2020	2															
33	2020	3															
33	2020	4															
33	2020	5															
33	2020	6															
33	2020	7															
33	2020	8															
33	2020	9															
33	2020	10	5	0.08	0.09	0.04	0.19	0.34	0.05	0.07				7.9	132565		
33	2020	11	7	0.15	0.21	0.27	0.19	0.57	0.06	0.05				11.8	56970		
33	2020	12	5	0.07	0.10	0.16	0.26	0.22	0.04	0.05				3.4	59199		
33	2021	1	4	0.05	0.05	0.09	0.24	0.11	0.04	0.04				3.9	65763		
33	2021	2	8	0.13	0.09	0.15	0.41	0.50	0.08	0.06	0.07	0.12	0.04	18.7	98197	09.11.2020 12:00	03.02.2021 12:00
33	2021	3	11	0.23	0.21	0.39	0.18	0.53	0.07	0.07				19.0	161381		
33	2021	4	13	0.25	0.28	0.52	0.26	0.90	0.08	0.08				9.4	159889		
33	2021	5	8	0.19	0.21	0.28	0.17	0.56	0.07	0.09	0.09	0.42	0.19	12.1	230885	03.02.2021 12:00	10.05.2021 12:00
33	2021	6	23	0.58	0.65	0.98	0.35	1.27	0.13	0.12				14.3	239639		
33	2021	7	5	0.05	0.13	0.04	0.10	0.50	0.06	0.05				20.8	272711		
33	2021	8	20	0.32	0.43	0.49	0.17	2.11	0.14	0.10				24.6	230288		
33	2021	9	8	0.18	0.18	0.25	0.15	0.74	0.06	0.05				12.3	149606		
33	2021	10	2	0.07	0.04	0.02	0.07	0.10	0.01	0.03				10.1	136659		
33	2021	11	9	0.14	0.21	0.42	0.14	0.58	0.06	0.08				5.3	60147		
33	2021	12	5	0.07	0.11	0.20	0.10	0.15	0.02	0.07				6.4	60647		

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
35	2018	11	10	0.25	0.19	0.17	0.67	0.18	0.05	0.05				4.0			
35	2018	12	13	0.25	0.28	0.14	0.24	0.10	0.03	0.04				4.9			
35	2019	1	9	0.12	0.21	0.06	0.26	0.05	0.03	0.03				5.5			
35	2019	2	11	0.26	0.36	0.25	0.34	0.13	0.03	0.05				4.6			
35	2019	3	8	0.15	0.26	0.20	0.23	0.21	0.04	0.06				3.9			
35	2019	4	9	0.23	0.24	0.20	0.09	0.14	0.02	0.07				8.1			
35	2019	5	8	0.20	0.20	0.28	0.15	0.37	0.04	0.17				4.6			
35	2019	6	8	0.19	0.18	0.10	0.08	0.67	0.08	0.10				7.5			
35	2019	7	5	0.12	0.01	0.01	0.18	0.26	0.03	0.07				5.7			
35	2019	8	6	0.20	0.18	0.13	0.16	0.18	0.03	0.06				7.2			
35	2019	9	6	0.17	0.07	0.10	0.23	0.27	0.04	0.04				4.2			
35	2019	10	6	0.12	0.10	0.06	0.31	0.06	0.03	0.02				4.3			
35	2019	11	16	0.48	0.47	0.36	0.23	0.35	0.04	0.07				6.6			
35	2019	12	12	0.22	0.29	0.15	0.46	0.10	0.05	0.04				3.6			
35	2020	1	8	0,11	0.24	0.12	0.32	0.12	0.04	0.04				4.0			
35	2020	2	9	0,12	0.19	0.09	0.50	0.11	0.06	0.04				3.6			
35	2020	3	10	0,18	0.32	0.22	0.61	0.27	0.05	0.04				4.4			
35	2020	4	6	0,14	0.13	0.18	0.25	0.15	0.03	0.02				3.8			
35	2020	5	8	0,16	0.17	0.27	0.23	0.22	0.04	0.11				3.9			
35	2020	6	5	0,13	0.07	0.06	0.06	0.23	0.03	0.03				7.7			
35	2020	7	4	0,10	0.04	0.02	0.12	0.20	0.04	0.05				5.1			
35	2020	8	5	0,12	0.10	0.11	0.11	0.24	0.04	0.22				5.8			
35	2020	9	7	0,11	0.05	0.02	0.71	0.18	0.06	0.15				11.3			
35	2020	10	7	0,19	0.16	0.14	0.14	0.32	0.05	0.09				5.0			
35	2020	11	7	0,11	0.16	0.11	0.41	0.07	0.05	0.06				4.5			
35	2020	12	8	0,17	0.24	0.15	0.11	0.07	0.02	0.03				4.9			
35	2020	1	10	0.20	0.25	0.14	0.09	0.04	0.01	0.03				7.2			
35	2021	2	13	0.24	0.44	0.32	0.36	0.27	0.05	0.07				5.5			
35	2021	3	6	0.11	0.20	0.18	0.24	0.11	0.03	0.05				4.0			
35	2021	4	9	0.27	0.19	0.31	0.23	0.30	0.05	0.05				4.4			
35	2021	5	8	0.21	0.20	0.26	0.05	0.37	0.05	0.17				7.6			
35	2021	6	8	0.22	0.11	0.07	0.09	0.72	0.10	0.16				12.0			
35	2021	7	5	0.13	0.09	0.14	0.04	0.37	0.07	0.08				8.5			
35	2021	8	4	0.10	0.05	0.02	0.10	0.08	0.03	0.03				5.5			
35	2021	9	3	0.08	0.05	0.06	0.05	0.12	0.03	0.03				6.4			
35	2021	10	6	0.08	0.08	0.03	0.30	0.11	0.06	0.06				7.9			
35	2021	11	7	0.10	0.13	0.06	0.23	0.06	0.03	0.03				3.8			
35	2021	12	11	0.16	0.28	0.09	0.23	0.07	0.04	0.04				4.5			

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
40	2018	11															
40	2018	12															
40	2019	1															
40	2019	2															
40	2019	3															
40	2019	4															
40	2019	5															
40	2019	6															
40	2019	7															
40	2019	8															
40	2019	9															
40	2019	10															
40	2019	11															
40	2019	12															
40	2020	1															
40	2020	2															
40	2020	3															
40	2020	4															
40	2020	5															
40	2020	6															
40	2020	7															
40	2020	8															
40	2020	9															
40	2020	10													54867		
40	2020	11		5.95	3.02	1.17	4.97	3.92	0.62	0.60					40608		
40	2020	12		0.37	0.69	0.25	0.42	0.24	0.05	0.10					19033		
40	2021	1		0.85	1.34	0.47	1.04	0.53	0.11	0.15					23217		
40	2021	2		1.07	2.04	0.60	0.92	1.52	0.10	0.23					49000		
40	2021	3		1.83	1.78	1.25	3.07	2.04	0.36	0.26					102578		
40	2021	4		2.60	3.60	2.30	0.91	2.23	0.14	1.67				22.46	151311		
40	2021	5		2.20	1.46	0.50	1.01	3.19	0.29	0.25				9.20	153928		
40	2021	6		0.60	0.97	0.53	0.10	0.71	0.04	0.11				13.99	167164		
40	2021	7		1.03	1.55	0.53	0.27	1.27	0.06	0.22				14.52	154928		
40	2021	8		8.10	16.50	1.73	3.60	10.26	0.70	2.16				12.37	136028		
40	2021	9		0.72	1.25	0.66	0.25	0.46	0.05	0.12				15.52	119811		
40	2021	10		0.76	0.86	0.58	0.84	0.83	0.12	0.14				15.08	76711		
40	2021	11												18.75	35733		
40	2021	12												14.51	21200		

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
41	2018	11															
41	2018	12															
41	2019	1															
41	2019	2															
41	2019	3															
41	2019	4															
41	2019	5															
41	2019	6															
41	2019	7															
41	2019	8															
41	2019	9															
41	2019	10															
41	2019	11															
41	2019	12															
41	2020	1															
41	2020	2															
41	2020	3															
41	2020	4															
41	2020	5															
41	2020	6															
41	2020	7															
41	2020	8															
41	2020	9															
41	2020	10															
41	2020	11															
41	2020	12															
41	2021	1															
41	2021	2															
41	2021	3									42.10	1.03	4.71			06.12.2020 15:00	16.03.2021 10:30
41	2021	4															
41	2021	5															
41	2021	6									2.93	0.83	0.84			16.03.2021 11:00	16.06.2021 10:30
41	2021	7															
41	2021	8															
41	2021	9									0.51	0.89	0.44			16.06.2021 11:00	16.09.2021 11:00
41	2021	10															
41	2021	11															
41	2021	12									12.04	0.63	0.89			16.09.2021 11:30	16.12.2021 11:30
41	2021	1															
41	2021	2															
41	2021	3									14.07	0.74	2.54			16.12.2021 11:30	16.03.2022 11:45

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
44	2018	11															
44	2018	12															
44	2019	1															
44	2019	2															
44	2019	3															
44	2019	4															
44	2019	5															
44	2019	6															
44	2019	7															
44	2019	8															
44	2019	9															
44	2019	10															
44	2019	11															
44	2019	12															
44	2020	1															
44	2020	2															
44	2020	3															
44	2020	4															
44	2020	5															
44	2020	6															
44	2020	7															
44	2020	8															
44	2020	9															
44	2020	10															
44	2020	11	8	0.10	0.10	0.04	0.65	0.10	0.08	0.04							
44	2020	12	12	0.24	0.24	0.05	0.86	0.20	0.12	0.05							
44	2021	1	16	0.25	0.24	0.04	0.96	0.23	0.11	0.05							
44	2021	2	3	0.31	0.07	0.05	2.34	0.21	0.27	0.08	0.06	0.05	0.05			01.11.2020 12:00	01.02.2021 14:00
44	2021	3	22	0.32	0.16	0.12	2.25	0.23	0.30	0.13							
44	2021	4	17	0.27	0.20	0.05	1.43	0.21	0.20	0.07							
44	2021	5	13	0.37	0.21	0.14	0.65	0.38	0.10	0.05	0.05	0.08	0.05			01.02.2021 12:00	03.05.2021 12:00
44	2021	6	5	0.14	0.05	0.02	0.12	0.29	0.03	0.07							
44	2021	7	12	0.26	0.06	0.81	0.24	0.25	0.10	0.45							
44	2021	8	6	0.12	0.00	0.02	0.50	0.14	0.05	0.02	0.09	0.05	0.06			03.05.2021 12:00	01.08.2021 11:20
44	2021	9	11	0.16	0.00	0.01	0.68	0.10	0.08	0.05							
44	2021	10	6	0.09	0.04	0.04	0.49	0.12	0.07	0.02	0.24	0.04	0.08			01.08.2021 11:20	01.11.2021 08:30

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
45	2018	11															
45	2018	12															
45	2019	1															
45	2019	2															
45	2019	3															
45	2019	4															
45	2019	5															
45	2019	6															
45	2019	7															
45	2019	8															
45	2019	9															
45	2019	10															
45	2019	11															
45	2019	12															
45	2020	1															
45	2020	2															
45	2020	3															
45	2020	4															
45	2020	5															
45	2020	6															
45	2020	7															
45	2020	8															
45	2020	9															
45	2020	10												4.5			
45	2020	11												7.6			
45	2020	12												2.4			
45	2021	1												3.2			
45	2021	2									0.05	0.02	0.06	17.6		20.10.2020 11:00	09.02.2021 15:30
45	2021	3												9.6			
45	2021	4									0.01	0.08	0.02	8.8		09.02.2021 15:30	28.04.2021 10:15
45	2021	5												4.0			
45	2021	6												8.2			
45	2021	7									0.02	0.09	0.02	7.3		09.02.2021 15:30	28.07.2021 10:00
45	2021	8												7.0			
45	2021	9												7.9			
45	2021	10												5.5			
45	2021	11									0.02	0.05	0.01	3.7		28.07.2021 10:00	03.11.2021 10:40

Station 50: No optional data available

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
51	2018	11												32.6			
51	2018	12												39.4			
51	2019	1												41.6			
51	2019	2												35.4			
51	2019	3												36.9			
51	2019	4												39.3			
51	2019	5												30.6			
51	2019	6												34.1			
51	2019	7												29.5			
51	2019	8												30.1			
51	2019	9												34.8			
51	2019	10												42.4			
51	2019	11												41.8			
51	2019	12												42.1			
51	2020	1												46.3			
51	2020	2												35.1			
51	2020	3												31.9			
51	2020	4												25.0			
51	2020	5												33.6			
51	2020	6												25.1			
51	2020	7												29.4			
51	2020	8												28.9			
51	2020	9												30.8			
51	2020	10												29.8			
51	2020	11															
51	2021	12												29.7			
51	2021	1									7.74	0.44	2.48			26.10.2020 10:35	26.01.2021 10:25
51	2021	2															
51	2021	3															
51	2021	4									3.36	0.85	1.40			26.01.2021 09:50	26.04.2021 10:15
51	2021	5															
51	2021	6															
51	2021	7									0.41	1.77	0.38			26.04.2021 10:30	26.07.2021 10:02
51	2021	8															
51	2021	9															
51	2021	10									3.62	0.67	1.00			26.07.2021 10:02	26.10.2021 11:00
51	2021	11															
51	2021	12															

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
53	2018	11												26.0			
53	2018	12												20.0			
53	2019	1												18.0			
53	2019	2												22.0			
53	2019	3												12.0			
53	2019	4												20.0			
53	2019	5												10.0			
53	2019	6												18.0			
53	2019	7												14.0			
53	2019	8												14.0			
53	2019	9												10.0			
53	2019	10												17.0			
53	2019	11												14.0			
53	2019	12												15.0			
53	2020	1												24.0			
53	2020	2												8.0			
53	2020	3												17.0			
53	2020	4												19.0			
53	2020	5												11.0			
53	2020	6												9.0			
53	2020	7												11.0			
53	2020	8												13.0			
53	2020	9												14.0			
53	2020	10												11.0			
53	2020	11												19.0			
53	2020	12												16.0			
53	2021	1												14.0			
53	2021	2									0.11	0.27	0.15	28.0		08.11.2020 10:05	05.02.2021 10:30
53	2021	3												17.0			
53	2021	4												15.0			
53	2021	5									0.03	0.32	0.14	8.0		05.02.2021 10:35	07.05.2021 11:10
53	2021	6												16.0		07.05.21 11:10	01.06.21 11:11
53	2021	7												12.0			
53	2021	8									0.01	0.07	0.02	9.0		01.06.2021 11:11:00 (O3) 07.05.2021 11:10:00	11.08.2021 10:45
53	2021	9												16.0			
53	2021	10												21.0			
53	2021	11												17.0			
53	2021	12									0.07	0.39	0.18	14.0		11.08.2021 10:45	15.12.2021 11:00

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
57	2018	10															
57	2018	11															
57	2018	12															
57	2019	1															
57	2019	2															
57	2019	3															
57	2019	4															
57	2019	5															
57	2019	6															
57	2019	7															
57	2019	8															
57	2019	9															
57	2019	10															
57	2019	11															
57	2019	12															
57	2020	1															
57	2020	2															
57	2020	3															
57	2020	4															
57	2020	5															
57	2020	6															
57	2020	7															
57	2020	8															
57	2020	9															
57	2020	10												8.9	30922		
57	2020	11												7.8	8563		
57	2020	12												7.8	1595		
57	2020	1									0.03	0.14	0.06	6.7	6419	02.11.2020 11:15	25.01.2021 12:00
57	2021	2												9.6	29763		
57	2021	3												12.5	64726		
57	2021	4												12.5	114581		
57	2021	5									0.08	0.08	0.04	8.1	146762	25.01.2021 13:00	04.05.2021 13:00
57	2021	6												12.8	199861		
57	2021	7												9.4	188660		
57	2021	8									0.01	0.05	0.02	7.1	105681	04.05.2021 13:00	04.08.2021 15:00
57	2021	9												7.1	76694		
57	2021	10												9.1	25443		
57	2021	11									0.02	0.15	0.06	7.5	8508	04.08.2021 15:00	04.11.2021 12:00
57	2021	12												9.1	5249		

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
58	2018	11															
58	2018	12															
58	2019	1															
58	2019	2															
58	2019	3															
58	2019	4															
58	2019	5															
58	2019	6															
58	2019	7															
58	2019	8															
58	2019	9															
58	2019	10															
58	2019	11															
58	2019	12															
58	2020	1															
58	2020	2															
58	2020	3															
58	2020	4															
58	2020	5															
58	2020	6															
58	2020	7															
58	2020	8															
58	2020	9															
58	2020	10															
58	2020	11															
58	2020	12															
58	2021	1									1.67	0.29	0.25			05.10.2020 15:40	26.01.2021 10:30
58	2021	2															
58	2021	3															
58	2021	4															
58	2021	5														26.01.2021 10:27	03.05.2021 14:37
58	2021	6															
58	2021	7															
58	2021	8									0.03	0.07	0.02				
58	2021	9														03.05.2021 14:37	22.09.2021 17:03
58	2021	10															
58	2021	11															
58	2021	12															
58	2021	13															
58	2021	14									0.84	0.22	0.07			22.09.2021 17:06	16.02.2022 11:30

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
59	2018	11												33.0			
59	2018	12												31.2			
59	2019	1												42.3			
59	2019	2												36.4			
59	2019	3												22.0			
59	2019	4												19.2			
59	2019	5												14.4			
59	2019	6												21.2			
59	2019	7												16.5			
59	2019	8												17.2			
59	2019	9												16.5			
59	2019	10												26.4			
59	2019	11												20.7			
59	2019	12												25.9			
59	2020	1												40.5			
59	2020	2												18.0			
59	2020	3												24.2			
59	2020	4												25.2			
59	2020	5												16.0			
59	2020	6												16.5			
59	2020	7												16.6			
59	2020	8												18.2			
59	2020	9												18.4			
59	2020	10												21.7			
59	2020	11												30.0			
59	2020	12												27.5			
59	2021	1												29.5			
59	2021	2												44.8			
59	2021	3												35.1			
59	2021	4												19.5			
59	2021	5												13.3			
59	2021	6					0.10	0.40	0.10	3.30				21.0			
59	2021	7					0.60	1.70	0.40	0.30				19.0			
59	2021	8												13.0			
59	2021	9					0.90	1.70	0.30	0.10				18.1			
59	2021	10												26.0			
59	2021	11					1.90	2.90	1.10	1.60				24.0			

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
60	2018	12															
60	2019	1															
60	2019	2															
60	2019	3															
60	2019	4															
60	2019	5															
60	2019	6															
60	2019	7															
60	2019	8															
60	2019	9															
60	2019	10															
60	2019	11															
60	2019	12															
60	2020	1															
60	2020	2															
60	2020	3															
60	2020	4															
60	2020	5															
60	2020	6															
60	2020	7															
60	2020	8															
60	2020	9															
60	2020	10	26	0.40	0.32	0.27	2.33	1.79	0.38	0.57				11.5			
60	2020	11	25	0.74	0.54	0.70	1.29	2.37	0.42	0.69				13.1			
60	2020	12	27	0.45	0.30	0.40	5.26	0.89	0.60	0.49				15.4			
60	2021	1	29	0.60	0.46	0.41	3.57	1.13	0.47	0.37	4.31	0.41	1.29	10.5		29.10.2020 14:30	29.01.2021 14:30
60	2021	2	38	0.45	0.89	0.60	2.47	1.52	0.32	0.28				20.9			
60	2021	3	29	0.57	0.62	0.63	1.45	2.54	0.21	0.27				17.2			
60	2021	4	33	0.39	0.47	0.44	1.86	1.78	0.38	0.97	2.28	0.77	0.54	15.1		29.01.2021 14:30	29.04.2021 14:30
60	2021	5	36	0.42	0.32	0.38	0.88	1.04	0.42	0.36				13.6			
60	2021	6	22	0.36	0.58	0.87	0.35	1.85	0.54	0.26	0.33	0.54	0.20	27.9		29.04.2021 14:35	29.07.2021 14:40
60	2021	7	32	0.52	0.70	0.68	1.92	2.78	0.31	0.48				21.5			
60	2021	8	23	0.42	0.56	0.62	0.79	1.69	0.34	0.38				20.1			
60	2021	9	33	0.75	0.51	0.42	1.14	3.61	0.22	0.36				19.9			
60	2021	10	2	0.28	0.24	0.14	0.92	0.13	0.16	0.35	0.88	1.30	0.52	13.7		29.07.2021 14:40	29.10.2021 14:40
60	2021	11	28	0.76	0.43	0.42	2.09	1.42	0.42	0.41				16.8			

Site no	Year	Month	Conductivity mS/cm	SO42- mgS/l	NO3- mgN/l	NH4+ mgN/l	Na+ mgNa/l	Ca2+ mgCa/l	Mg2+ mgMg/l	K+ mgK/l	Cl- in particles µg/cm2month	NO3- in particles µg/cm2month	SO42- in particles µg/cm2month	Conc. PM10 µg/m^3	Total global irradiation Wh/m2	Date of mounting of IVL passive samplers	Date of demounting of IVL passive samplers
61	2018	12															
61	2019	1															
61	2019	2															
61	2019	3															
61	2019	4															
61	2019	5															
61	2019	6															
61	2019	7															
61	2019	8															
61	2019	9															
61	2019	10															
61	2019	11															
61	2019	12															
61	2020	1															
61	2020	2															
61	2020	3															
61	2020	4															
61	2020	5															
61	2020	6															
61	2020	7															
61	2020	8															
61	2020	9															
61	2020	10	9	0.17	0.24	0.25	0.23	0.45	0.06	0.04				16.3			
61	2020	11	13	0.22	0.32	0.48	0.08	0.34	0.05	0.06				32.1			
61	2020	12	20	0.47	0.54	0.40	0.41	0.40	0.07	0.52				33.2			
61	2021	1	19	0.44	0.46	0.35	0.51	1.04	0.46	0.45				31.4			
61	2021	2	11	0.29	0.25	0.47	0.63	0.62	0.31	0.60	0.42	0.28	0.19	35.6		20.11.2020 14:00	20.02.2021 14:00
61	2021	3	16	0.23	0.44	0.74	0.46	0.60	0.55	0.30				25.2			
61	2021	4	20	0.53	0.71	1.33	0.55	0.77	0.34	0.40				15.0			
61	2021	5	15	0.50	0.36	0.53	0.57	1.08	0.44	0.75	0.12	0.34	0.10	11.9		20.02.2021 14:05	20.05.2021 14:05
61	2021	6	13	0.33	0.47	1.34	0.33	0.71	0.38	0.49				20.5			
61	2021	7	22	0.79	0.49	0.75	0.76	0.90	0.54	0.40				18.9			
61	2021	8	15	0.42	0.42	0.63	0.43	1.07	0.38	0.41	0.44	0.65	0.19	10.5		20.05.2021 14:10	20.08.2021 14:10
61	2021	9	14	0.66	0.58	0.65	0.52	1.16	0.39	0.52				17.7			
61	2021	10	8	0.31	0.40	0.48	0.55	0.38	0.43	0.53				30.1			
61	2021	11	15	0.66	0.41	0.42	0.78	0.67	0.32	0.52	0.09	0.28	0.13	30.4		07.09.2021 00:00	20.11.2021 14:20

Appendix B

Annual average values for the test sites for the exposure period 2020/21, and erratum 2017/18

Table B.1: Mandatory data

										Mandatory															
		Climate	Precipitation			Climate		Precipitation		Climate										Precipitation			Particles	Particles
Samplingperiod		Temp	RH	Amount	Sampling period	Temp	RH	Amount	Sampling period	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^+	Cl^-	IVL passive sampler. Three-monthly avarages	
Site no	Year	o C	%	mm	Year	o C	%	mm	Year	°C	%	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mm	pH	mgCl/l	µg cm^{-2} month^{-1}	mgm^{-2} year^{-1}
01	18/19	11.1	68	442.3	19/20	11.5	68	605.2	20/21	11.3	71	2.7		22.1		37			0.42	446.6	5.60	2.20	5.2	625.3
03	18/19	10.7	72	504.8	19/20	10.5	75	482.9	20/21	9.2	78	8.6		14.5		45			0.32	487.9	5.29	1.60	10.7	1286.1
10	18/19	12.2	73	771.8	19/20	12.5	71	718.4	20/21	11.1	78	6.1		21.5		40			0.30	945.4	6.31	0.98	18.1	2170.8
13	18/19	17.4	70	683.7	19/20	17.3	69	845.6	20/21	16.7	70		0.4		17.4		54.7		0.46	958.0			42.8	5132.2
14	18/19	15.6	72	837.8	19/20	15.9	72	841.2	20/21	15.1	73		0.4		4.9		69.6		0.29	946.6			40.5	4863.9
15	18/19	15.9	63	673.6	19/20	15.0	66	1036.8	20/21	16.4	61	2.6		32.0		50			0.71	637.2			15.3	1837.2
16	18/19	13.3	78	812.2	19/20	13.9	79	801.4	20/21	13.2	79			30.7						513.6				
21	18/19	7.4	74	1038.3	19/20	8.2	74	1012.4	20/21	7.9	73	2.0		3.9			38.9		0.11	692.3	5.31	1.53	7.1	854.4
23	18/19	6.8	78	1923.6	19/20	7.3	78	2053.2	20/21	7.2	78	0.1		0.9		60	51.6	0.03	0.06	1864.9	4.99	2.14	5.0	602.9
24	18/19	8.2	74	500.8	19/20	9.3	71	491.4	20/21	8.8	74		0.4		6.4		56.2		0.25	475.3	5.23	0.29	16.1	1936.5
26	18/19	7.2	79	575.1	19/20	8.9	77	597.0	20/21	7.9	80		0.2		1.4		43.4		0.07	688.0	5.10	0.43	1.3	150.2
31	18/19	14.9	54	217.3	19/20	14.8	60	739.2	20/21	14.0	60	1.1		19.2		55			0.54	388.5	6.27	0.44	12.0	1438.8
33	18/19	15.0	56	380.0	19/20	16.0	70	403.2	20/21	15.2	70	0.6		1.0		82			0.27	656.2	5.79	0.32	11.6	1386.3
35	18/19	5.7	82	956.3	19/20	7.2	83	768.4	20/21	6.4	81	0.4		1.9		60		0.18		782.5	5.16	0.28		
40	18/19	13.5	73	607.7	19/20	14.2	67	647.2	20/21	13.0	70	0.9	0.3	11.8	14.5	21	50.6		0.34	851.9	6.36	1.20	11.2	1349.6
41	18/19				19/20				20/21	10.0			0.6		20.1		33.7		0.21				139.0	16682.8
44	18/19	-0.2	74		19/20	1.4	73		20/21	1.5	72	1.1		0.7			58.3		0.06	484.7	5.25	1.28	4.3	510.3
45	18/19	7.6	75	1112.1	19/20	8.0	74	1127.2	20/21	6.8	77		0.2	4.0	1.1	77	72.5		0.15	1197.0			8.6	1033.9
50	18/19	9.6	75	708.6	19/20	9.6	76	927.0	20/21	6.3	91	7.2		25.7		41				387.4				
51	18/19	18.9	58	411.2	19/20	19.3	57	440.6	20/21	18.6	58	6.2		43.1		19			0.78	493.0	7.24		52.9	6351.4
53	18/19	12.3	69	725.0	19/20	12.0	69	686.0	20/21	10.2	71	1.2	0.6	15.4	9.9	55	56.2		0.41	623.0			6.9	822.8
57	18/19	6.0	80	447.8	19/20	7.2	80	664.8	20/21	6.3	79		0.3	8.3	4.4		52.9		0.13	615.0	5.2	0.64	7.4	882.4
58	18/19				19/20				20/21	16.2									0.26				17.9	2144.3
59	18/19	10.0	75	736.0	19/20	9.9	78	876.9	20/21	9.6	72	3.5		17.5		57.1				724.5	6.69	1.69		
60	18/19	17.6	55	656.0	19/20	17.7	54	686.7	20/21	17.2	54	2.7	1.0	18.4	6.4		74.6		0.49	910.8	6.29	4.57	16.6	1986.2
61	18/19	13.2	70	744.2	19/20	11.7	72	1098.9	20/21	12.3	71	3.6	0.4	28.2	15.2	43	44.2		0.41	777.7	6.07	0.73	10.9	24060.2

Generally: IVL data should be used in material analysis rather than local data

IVL passive samplers were used

Data availability ≤ 75% (see Table E.1 and E.2)

Not available

Table B.2: Optional data

		Optional									
		Precipitation								Particles	Total global irradiation
	Sampling period	Cond	SO_4^{2-}	NO_3^-	NH_4^+	Na^+	Ca_2^+	Mg_2^+	K^+	Conc. PM_{10}	(285 to 3000 nm) Only reported w hen available in all months
Site no	Year	µS/cm	mgS/l	mgN/l	mgN/l	mgNa/l	mgCa/l	mgMg/l	mgK/l	µg/m^3	kWh/m^2
01	20/21	18.93	13.08	0.82						21.8	
03	20/21	63.72	19.49	1.29						21.7	
10	20/21	30.80	0.84	0.33	1.01	0.58	1.32	0.15	0.39	16.6	756
13	20/21										
14	20/21										
15	20/21									27.8	
16	20/21									34.4	
21	20/21	16.22	0.19	0.29	0.29	0.93	0.82	0.12	0.34	15.8	
23	20/21	17.83	0.29	0.34	0.32	1.25	0.17	0.15	0.09	4.1	
24	20/21										
26	20/21										
31	20/21	10.56	0.41	0.19						15.7	1719
33	20/21	6.94	0.14	0.14	0.22	0.21	0.45	0.05	0.05	12.7	1921
35	20/21	7.06	0.14	0.15	0.12	0.16	0.17	0.04	0.06	6.4	
40	20/21		1.11	1.47	0.66	0.68	1.11	0.11	0.27	14.7	1194
41	20/21										
44	20/21	9.27	0.20	0.08	0.16	0.73	0.21	0.10	0.11		
45	20/21									7.4	
50	20/21										
51	20/21									29.7	
53	20/21									15.9	
57	20/21									9.2	969
58	20/21										
59	20/21					0.59	1.50	0.33	0.72	24.3	
60	20/21	26.74	0.48	0.43	0.46	2.83	1.33	0.43	0.46	17.4	
61	20/21	16.02	0.52	0.48	0.61	0.56	0.79	0.38	0.51	23.3	
	Data availability < 75% (see Table E.1)										
	Not available										

Table B.3: Additional data

		Additional							
		gases	ions in particles						
	Sampling period	NH_3	Cl^-	NO_3^-	SO_4^{2-}	Ca^{2+}	Mg^{2+}	Na^+	K^+
Site no	Year	µg/m^3,STP	µg/cm^{2}month						
1	20/21		0.11	0.21	0.12				
3	20/21		0.09	0.17	0.45				
10	20/21		0.06	0.13	0.32	0.18	0.02	0.06	0.03
13	20/21		2.32	0.86	0.56				
14	20/21		2.97	0.77	0.86				
15	20/21		0.05	0.38	0.13				
16	20/21								
21	20/21		0.20	0.13	0.05				
23	20/21		0.56	0.12	0.12				
24	20/21		0.36	0.35	0.23				
26	20/21		0.03	0.07	0.02				
31	20/21		0.08	0.32	0.13				
33	20/21		0.08	0.28	0.12				
35	20/21								
40	20/21		0.32	0.41	0.21				
41	20/21		14.81	0.83	1.93				
44	20/21		0.11	0.05	0.06				
45	20/21	1.8	0.03	0.06	0.03	0.14	0.01	0.02	0.02
50	20/21								
51	20/21		3.80	0.93	1.32	2.91	0.34	2.05	0.15
53	20/21		0.06	0.27	0.13				
57	20/21		0.04	0.10	0.05				
58	20/21		2.80	0.67	0.38				
59	20/21								
60	20/21		1.95	0.76	0.64				
61	20/21		0.27	0.39	0.15				

IVL passive samplers were used

Data availability < 75% (see Table E.2)

Not available

Table B.4: Reported start and end dates for the exposures

No	Name	Country	Rack coordinates	Start date	End date, 1 year
01	Prague	Czech Republic	+50°06'20.8", 14°26'51.8"	Oct. 29	2021-11-12
03	Kopisty	Czech Republic	+50°32'39.4", 13°37'24.4"	Oct. 28	2021-10-12
10	Bottrop	Germany	+51°31'33.0", 06°58'37.4"	Oct. 06A Oct. 26B	2021-12-01
13	Rome	Italy	+41°54'20.0", 12°31'02.3"	Dec. 15C	2021-12-16
14	Casaccia	Italy	+42°02'26.5", 12°18'09.5"	Dec. 14	2021-12-16
15	Milan	Italy	+45°28'42.7", 09°13'49.8"	Dec. 17	2021-12-09
21	Oslo	Norway	+59°55'11.2", 10°41'23.2"	Oct. 28	2021-11-02
23	Birkenes	Norway	+58°23'20.5", 08°15'04.5"	Oct. 30	2021-11-10
24	Stockholm	Sweden	+59°19'00.3", 18°03'24.2"	Oct. 30	2021-11-02
26	Aspvreten	Sweden	+58°48'24.0", 17°22'25.0"	Nov. 6	2021-11-02
31	Madrid	Spain	+40°27'26.5", -03°51'54.7"	Nov. 4	2021-11-18
33	Toledo	Spain	+39°32'31.8", -04°20'26.7"	Jan. 14D	2021-11-18
40	Paris	France	+48°51'49.1", 02°20'40.4"	Oct. 28	2021-11-09
41	Berlin	Germany	+52°30'59.6", 13°17'02.1"	Dec. 06	
44	Svanvik	Norway	+69°27'18.5", 30°02'27.5"	Nov. 1	2021-11-02
45	Chaumont	Switzerland	+47°02'58.3", 06°58'45.2"	Oct. 20	2021-11-03
50	Katowice	Poland	+50°15'52.5", 18°58'30.3"	Dec. 03	2021-12-08
51	Athens	Greece	+37°59'17.6", 23°43'39.6"	Oct. 26	2022-01-05
53	Vienna	Austria	+48°14'56.0", 16°21'24.6"	Nov. 6	2021-12-15
57	Hämeenlinna	Finland	+60°58'33.4", 24°32'02.5"	Nov. 2	2021-11-04
58	New Haven	USA	+41°15'37.4", -72°59'15.7"	Sep. 22E Oct. 5F Oct. 26G Nov. 9H	2022-03-15
59	Žilina	Slovakia	+49°12'10.12",18°45'19.03"	Dec. 01C	2021-11-09
60	Split	Croatia	+43°51',16°02'	Oct. 29	2021-10-29
61	Zagreb	Croatia	+45°49',16°26'	Nov. 20	2021-11-20

A: Exposure of zinc and passive samplers

B: Exposure of other samples

C: Glass and stone samples from LISA were not exposed

D: Exposure started in 2021, not 2020. Former samples were also removed by mistake, but later be installed.

E: Exposure of zinc and titanium-zinc samples

F: Exposure of passive samplers

G: Exposure of coil coated samples

H: Exposure of carbon steel samples

Table B.5: Months included in the calculation of the annual averages

Site no	Year	Months included in annual average
01	20/21	Nov-Oct
03	20/21	Nov-Oct
10	20/21	Oct-Nov
13	20/21	Dec-Dec
14	20/21	Dec-Dec
15	20/21	Jan- Nov
16	20/21	Nov-Oct
21	20/21	Nov-Okt
23	20/21	Nov-Okt
24	20/21	Nov-Okt
26	20/21	Nov-Okt
31	20/21	Nov-Nov
33	20/21	Nov-Nov
35	20/21	Jan-Dec
40	20/21	Nov-Okt
41		Dec-Nov
44	20/21	Nov-Oct
45	20/21	Nov-Oct
50	20/21	Dec-Nov
51	20/21	Nov-Dec
53	20/21	Nov-Dec
57	20/21	Nov-Oct
58		Oct-Feb22
59	20/21	Dec-Oct
60	20/21	Nov-Oct
61	20/21	Dec-Nov

No environmental data reporting from station

Table B.6: Erratum of meteorological annual values (T, RH, and precipitation amount) of the years 2015/16 and 2016/17

										Mandatory																
		Climate		Precipitation		Climate		Precipitation		Climate											Precipitation			Particles	Particles
	Samplingperiod	Temp	RH	Amount	Sampling period	Temp	RH	Amount	Sampling period	Temp	RH		SO_2	IVL-passive SO_2 [1]	NO_2	IVL-passive NO_2 [1]	O_3	IVL-passive O_3 [1]	HNO_3	IVL-passive HNO_3 [1]	Amount	H^+	Cl^-	IVL passive sampler. Three-monthly avarages [1]	
Site no	Year	o C	%	mm	Year	o C	%	mm	Year	°C	%	Site no	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mm	pH	mgCl/l	µg cm^{-2} month^{-1}	mgm^{-2} year^{-1}
01	15/16	11.0	73	567.9	16/17	10.0	72	577.0	17/18	11.2	67	01	5.0		21.95		46			0.63	368.6	6.50	1.89	8.7	1046.5
03	15/16	10.5	75	572.0	16/17	9.6	75	478.5	17/18	10.8	71	03	10.4		16.13		53			0.55	353.7	6.27	9.36	16.5	1981.6
10	15/16	12.2	76	870.7	16/17	11.5	77	741.8	17/18	12.3	74	10	9.5		23.75		44			0.60	658.7	5.30	1.55	19.9	2390.7
13	15/16	17.5	70	590.3	16/17	17.5	66	400.0	17/18	17.2	74	13	1.1		49.82		44			0.61	1007.3			44.4	5324.7
14	15/16	15.6	76	639.0	16/17	15.0	69	429.5	17/18	15.3	73	14		0.5		6.7		58.7		0.42	580.2			29.4	3532.9
15	15/16	15.5	64	829.6	16/17	15.8	60	528.4	17/18	15.6	65	15	3.6		39.93		46			1.23	785.2			16.7	2007.9
16	15/16	14.3	80	861.8	16/17	14.3	77	652.6	17/18	14.4	78	16			33.99					1.40	853.2			15.0	1800.1
21	15/16	7.6	76	767.5	16/17	7.1	77	903.8	17/18	7.6	71	21	0.2		17.04			44.1		0.20	619.1	5.49	2.80	12.2	1459.8
23	15/16	6.6	83	1510.1	16/17	6.5	80	2032.9	17/18	6.5	76	23	0.2		0.96		50	61.0	0.1	0.15	1424.9	5.05	3.20	5.4	642.1
24	15/16	8.3	75	284.6	16/17	7.6	74	295.3	17/18	8.6	72	24	0.6	0.5	11.66	7.7	56	61.0		0.39	179.4	5.14	0.57	14.9	1786.5
26	15/16	7.3	78	395.2	16/17	7.0	79	537.1	17/18	7.3	79	26		0.3		1.5		52.0		0.10	422.5	5.14	0.77	3.8	460.4
31	15/16	15.8	66	318.8	16/17	16.3	65	387.4	17/18	14.0	57	31	0.7		25.00		60			0.72	527.5	6.30	1.64	18.1	2167.3
33	15/16	12.9	62	553.6	16/17	14.0	57	529.6	17/18	13.4	61	33	0.3		1.24		86			0.43	786.5	5.71	0.62	8.3	992.1
35	15/16				16/17				17/18			35													
40	15/16	13.4	76	696.0	16/17	13.2	74	656.7	17/18	13.6	72	40		0.6		22.4		42.7		0.71	729.4	5.25	2.62	8.9	1068.7
41	15/16	10.2	79		16/17	9.8	80		17/18	11.4	74	41		0.8		21.8		28.0		0.57	402.9	6.08		72.2	8660.4
44	15/16	1.7	77	527.2	16/17	0.8	75	438.0	17/18	0.8	73	44	5.0		1.35			57.6		0.07	381.9	4.83	0.80	8.8	1056.0
45	15/16	7.5	79	1205.8	16/17	7.7	74	722.9	17/18	7.5	77	45		0.4	5.63	1.6	86	80.7		0.33	1184.1	5.62	0.15	3.8	460.9
50	15/16	9.9	77	767.0	16/17	9.0	76	704.6	17/18	10.1	75	50	9.5		29.58		45				545.6				
51	15/16	19.7	56	191.4	16/17	18.6	54	371.0	17/18	19.6	57	51	8.5		49.54		15			0.95	525.6	7.21		116.2	13944.7
53	15/16	12.0	72	707.0	16/17	11.4	69	591.0	17/18	12.4	69	53	5.3		18.50		62			0.74	638.0			7.4	889.0
57	15/16	6.2	81	567.8	16/17	5.0	82	607.5	17/18	6.3	79	57		0.5	14.12	6.2		53.6		0.21	503.3	5.06	0.73	9.5	1143.9
58	15/16				16/17				17/18	11.6	74	58								0.39	1272.7			11.0	1325.6
59	15/16	10.0	78	867.0	16/17	9.3	77	829.9	17/18	9.8	73	59	20.9		22.38		43.6				534.5	6.61	5.24		
60	15/16				16/17				17/18	17.5	58	60	3.6	1.3	21.73	8.8		78.6		0.58	926.1	5.67	4.55	78.7	5673.9
61	15/16				16/17				17/18	13.0	72	61	1.7	0.9	32.56	19.0	52	51.2		0.73	957.7	5.53	0.35	44.6	2367.4

Generally: IVL data should be used in material analysis rather than local data

1. Numerical values: Location measurment in addition to IVL values.

Errata (correction of data reported in the 2017-18 environmental report)

IVL passive samplers were used

Station 3: Two of three periods missing.

Station 23: The O_3 values were corrected according to "O_3 old/new Birkenes 2010" = 0.76. IVL sample data will be official.

Station 24: SO_2, NO_2 and O_3 values were ,eported as optional data. The main data are from passive samplers. The IVL sampling data are official. Data were taken from nearby stations: Kaanan and Sveavägen. For pH and Cl in March 2018: The current was turned off, and no sample was collected.

Station 26: T values are from station Berga Mo - 0.5°C. RH and Prec. data are from station Tullinge A. H^+ and Cl^- data are from station Edeby.

Station 45: One of four periods missing.

Station 57: Hämeenlinna centre of town.

Station 58: Adjusted from inches.

Station 59: Zilina EEA urban background station.

Stations 60 and 61: Second period reported, of one days exposure with high deposition, disregarded in the annual average.

Appendix C

Several 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-monthly samples (µg cm^{-2} $month^{-1}$). M = Missing values

Cylindric teflon				µg cm^{-2} $month^{-1}$									
project	station	start	stop	days	mass	Cl^-	NO_3^-	SO_4^{2-}	NH_4^+	Ca^{2+}	Mg^{2+}	Na^+	K^+
20-0520	Prague 1	29.10.2020	01.01.2021	64	5	0.23	0.29	0.17					
20-0520	Prague 1	01.01.2021	13.04.2021	102	5	0.11	0.27	0.16					
20-0520	Prague 1	13.04.2021	01.07.2021	79	5	0.02	0.08	0.04					
	Prague 1				M	M	M	M					
20-0520	Kopisty 3	28.10.2020	01.01.2021	65	5	0.03	0.12	0.25					
	Kopisty 3				M	M	M	M					
20-0520	Kopisty 3	01.02.2021	25.04.2021	83	11	0.20	0.17	0.55					
	Kopisty 3				M	M	M	M					
20-0520	Kopisty 3	03.07.2021	11.11.2021	131	13	0.04	0.19	0.48					
20-0520	Bottrop 10	06.10.2020	06.01.2021	92	22	0.08	0.11	0.49		0.23	0.02	0.07	0.03
20-0520	Bottrop 10	06.01.2021	31.03.2021	84	20	0.12	0.11	0.42		0.21	0.03	0.12	0.02
20-0520	Bottrop 10	31.03.2021	23.06.2021	84	16	0.01	0.13	0.16		0.16	0.02	0.02	0.03
20-0520	Bottrop 10	23.06.2021	15.09.2021	84	13	0.03	0.18	0.19		0.12	0.02	0.03	0.04
	Rome 13				M	M	M	M					
20-0520	Rome 13	23.03.2021	16.06.2021	85	41	1.04	0.91	0.33					
20-0520	Rome 13	16.06.2021	22.09.2021	98	64	1.46	1.26	0.50					
20-0520	Rome 13	22.09.2021	16.12.2021	85	21	4.58	0.35	0.86					
20-0520	Casaccia 14	14.12.2020	22.03.2021	98	35	6.96	0.97	2.17					
20-0520	Casaccia 14	22.03.2021	17.06.2021	87	41	0.96	0.58	0.25					
20-0520	Casaccia 14	17.06.2021	21.09.2021	96	68	1.29	1.05	0.44					
20-0520	Casaccia 14	21.09.2021	16.12.2021	86	16	2.34	0.41	0.45					
20-0520	Milan 15	17.12.2020	24.03.2021	97	1	0.01	0.01	0.01					
20-0520	Milan 15	24.03.2021	23.06.2021	91	38	0.08	0.84	0.30					
20-0520	Milan 15	23.06.2021	23.09.2021	92	14	0.01	0.31	0.04					
20-0520	Milan 15	23.09.2021	09.12.2021	77	8	0.09	0.39	0.19					

20-0520	Oslo-Sköyen 21	30.10.2020	01.02.2021	94	3	0.20	0.09	0.07					
20-0520	Oslo-Sköyen 21	01.02.2021	23.04.2021	81	11	0.41	0.16	0.05					
20-0520	Oslo-Sköyen 21	23.04.2021	21.07.2021	90	8	0.06	0.13	0.04					
20-0520	Oslo-Sköyen 21	21.07.2021	02.11.2021	104	7	0.16	0.15	0.05					
20-0520	Birkenes 23	28.10.2020	28.01.2021	92	3	1.07	0.06	0.17					
20-0520	Birkenes 23	28.01.2021	28.04.2021	90	3	0.39	0.17	0.12					
20-0520	Birkenes 23	28.04.2021	28.07.2021	91	7	0.09	0.12	0.07					
20-0520	Birkenes 23	28.07.2021	10.11.2021	105	6	0.66	0.11	0.13					
20-0520	Stockholm 24	30.10.2020	01.02.2021	94	5	0.76	0.12	0.14					
20-0520	Stockholm 24	01.02.2021	07.05.2021	95	14	0.20	0.26	0.14					
20-0520	Stockholm 24	07.05.2021	12.08.2021	97	23	0.08	0.44	0.16					
20-0520	Stockholm 24	12.08.2021	02.11.2021	82	23	0.41	0.62	0.49					
20-0520	Aspvreten 26	30.10.2020	01.02.2021	94	2	0.05	0.07	0.03					
20-0520	Aspvreten 26	01.02.2021	30.04.2021	88	3	0.02	0.08	0.03					
20-0520	Aspvreten 26	30.04.2021	10.08.2021	102	2	0.02	0.04	0.02					
20-0520	Aspvreten 26	10.08.2021	02.11.2021	84	-2	0.02	0.08	0.02					
20-0520	Madrid 31	06.11.2020	03.02.2021	89	8	0.21	0.10	0.10					
20-0520	Madrid 31	03.02.2021	10.05.2021	96	14	0.06	0.59	0.20					
20-0520	Madrid 31	10.05.2021	24.08.2021	106	17	0.02	0.23	0.08					
20-0520	Madrid 31	24.08.2021	18.11.2021	86	8	0.03	0.37	0.14					
20-0520	Toledo 33	09.11.2020	03.02.2021	86	5	0.07	0.12	0.04					
20-0520	Toledo 33	03.02.2021	10.05.2021	96	18	0.09	0.42	0.19					
	Toledo 33				M	M	M	M					
	Toledo 33				M	M	M	M					
20-0520	Paris 40	28.10.2020	04.02.2021	99	M	M	M	M					
20-0520	Paris 40	04.02.2021	11.05.2021	96	13	0.50	0.71	0.32					
20-0520	Paris 40	11.05.2021	11.08.2021	92	16	0.15	0.30	0.16					
20-0520	Paris 40	11.08.2021	29.10.2021	79	4	0.30	0.18	0.13					

20-0520	Berlin	06.12.2020	16.03.2021	100	297	42.10	1.03	4.71					
20-0520	Berlin	16.03.2021	16.06.2021	92	146	2.93	0.83	0.84					
20-0520	Berlin	16.06.2021	16.09.2021	92	44	0.51	0.89	0.44					
20-0520	Berlin	16.09.2021	16.12.2021	91	55	12.04	0.63	0.89					
20-0520	Berlin	16.12.2021	16.03.2022	90	138	14.07	0.74	2.54					
20-0520	Svanvik 44	01.11.2020	01.02.2021	92	0	0.06	0.05	0.05					
20-0520	Svanvik 44	01.02.2021	03.05.2021	93	5	0.05	0.08	0.05					
20-0520	Svanvik 44	03.05.2021	01.08.2021	90	7	0.09	0.05	0.06					
20-0520	Svanvik 44	01.08.2021	01.11.2021	92	6	0.24	0.04	0.08					
20-0520	Chaumont 45	20.10.2020	09.02.2021	112	16	0.05	0.02	0.06		0.30	0.02	0.04	0.02
20-0520	Chaumont 45	09.02.2021	28.04.2021	78	5	0.01	0.08	0.02		0.11	0.01	0.01	0.01
20-0520	Chaumont 45	28.04.2021	28.07.2021	91	7	0.02	0.09	0.02		0.09	0.01	0.01	0.02
20-0520	Chaumont 45	28.07.2021	03.11.2021	98	5	0.02	0.05	0.01		0.02	0.00	0.01	0.01
20-0520	Aristotelous 51	26.10.2020	26.01.2021	92	35	7.74	0.44	2.48		3.25	0.57	4.08	0.20
20-0520	Aristotelous 51	26.01.2021	26.04.2021	90	76	3.36	0.85	1.40		2.52	0.30	1.82	0.16
20-0520	Aristotelous 51	26.04.2021	26.07.2021	91	48	0.41	1.77	0.38		2.93	0.14	0.40	0.08
20-0520	Aristotelous 51	26.07.2021	26.10.2021	92	53	3.62	0.67	1.00		2.93	0.33	1.90	0.16
20-0520	Vienna 53	08.11.2020	05.02.2021	89	3	0.11	0.27	0.15					
20-0520	Vienna 53	05.02.2021	07.05.2021	91	5	0.03	0.32	0.14					
20-0520	Vienna 53	07.05.2021	11.08.2021	96	9	0.01	0.07	0.02					
20-0520	Vienna 53	11.08.2021	15.12.2021	126	9	0.07	0.39	0.18					
20-0520	Hämeenlinna 57	02.11.2020	25.01.2021	84	2	0.03	0.14	0.06					
20-0520	Hämeenlinna 57	25.01.2021	04.05.2021	99	11	0.08	0.08	0.04					
20-0520	Hämeenlinna 57	04.05.2021	04.08.2021	92	10	0.01	0.05	0.02					
20-0520	Hämeenlinna 57	04.08.2021	04.11.2021	92	6	0.02	0.15	0.06					
20-0520	West Haven	05.10.2020	26.01.2021	113	8	1.67	0.29	0.25					
20-0520	West Haven	26.01.2021	03.05.2021	97	M	M	M	M					
20-0520	West Haven	03.05.2021	22.09.2021	142	3	0.03	0.07	0.02					
20-0520	West Haven	22.09.2021	16.02.2022	147	4	0.84	0.22	0.07					

20-0520	Split 60	29.10.2020	29.01.2021	92	17	4.31	0.41	1.29					
20-0520	Split 60	29.01.2021	29.04.2021	90	17	2.28	0.77	0.54					
20-0520	Split 60	29.04.2021	29.07.2021	91	14	0.33	0.54	0.20					
20-0520	Split 60	29.07.2021	29.10.2021	92	19	0.88	1.30	0.52					
20-0520	Zagreb 61	20.11.2020	20.02.2021	92	8	0.42	0.28	0.19					
20-0520	Zagreb 61	20.02.2021	20.05.2021	89	12	0.12	0.34	0.10					
20-0520	Zagreb 61	20.05.2021	20.08.2021	92	763	0.44	0.65	0.19					
20-0520	Zagreb 61	20.08.2021	20.11.2021	92	13	0.09	0.28	0.13					
	Adjusted by NILU to the same mounting as demounting time: 01.02.2021 09:30:00												
	Start date adjusted by NILU from 01.04 til 01.02. 61 days added. Result divided by three.												

Table C.2: Gas concentration measurements with IVL passive samplers sheltered from rain. Tri-monthly samples (µg/m^3). M = missing values.

Project ID	Customer
20-0520	ICP- Materials 2020-2021

Sp-id	Station	Sample Name	Indoor/Outdo	Start	Stop	Sample	Days	Temp ºC	SO_2 µg/m^3 STP	NO_2 µg/m^3 STP	NH_3 µg/m^3 STP	HNO_3 µg/m^3 STP
1719	Aristotelous 51		Outdoor	26.10.2020 10:35	26.01.2021 10:25	188010	92	14.1			4.4	
1719	Aristotelous 51			26.10.2020 10:35	26.01.2021 10:25	191361	92					
1719	Aristotelous 51			26.10.2020 10:35	26.01.2021 10:25	193994	92	14.1				0.20
1719	Aristotelous 51			26.01.2021 09:50	26.04.2021 10:15	191342	90					
1719	Aristotelous 51		Outdoor	26.01.2021 09:50	26.04.2021 10:15	202671	90	13.2			3.9	
1719	Aristotelous 51			26.01.2021 09:50	26.04.2021 10:15	202726	90	13.2				0.04
1719	Aristotelous 51			26.04.2021 10:30	26.07.2021 10:02	204564	91					
1719	Aristotelous 51		Outdoor	26.04.2021 10:30	26.07.2021 10:02	209126	91	25.5			4.1	
1719	Aristotelous 51			26.04.2021 10:30	26.07.2021 10:02	214254	91	25.5				1.8
1719	Aristotelous 51			26.07.2021 10:02	26.10.2021 11:00	204570	92					
1719	Aristotelous 51		Outdoor	26.07.2021 10:02	26.10.2021 11:00	226244	92	25.0			5.1	
1719	Aristotelous 51			26.07.2021 10:02	26.10.2021 11:00	226731	92	25.0				1.1
1703	Aspvreten 26		Outdoor	30.10.2020 14:00	01.02.2021 12:00	191012	94	0.2	0.34			
1703	Aspvreten 26			30.10.2020 14:00	01.02.2021 12:00	191368	94					
1703	Aspvreten 26		Outdoor	30.10.2020 14:00	01.02.2021 12:00	193904	94	0.2		1.9		
1703	Aspvreten 26			30.10.2020 14:00	01.02.2021 12:00	193978	94	0.2				0.09
1703	Aspvreten 26			01.02.2021 12:00	30.04.2021 12:00	191334	88					
1703	Aspvreten 26			01.02.2021 12:00	30.04.2021 12:00	193989	88	5.6				0.04
1703	Aspvreten 26		Outdoor	01.02.2021 12:00	30.04.2021 12:00	198103	88	5.6	0.22			
1703	Aspvreten 26		Outdoor	01.02.2021 12:00	30.04.2021 12:00	200873	88	5.6		1.4		
1703	Aspvreten 26			30.04.2021 12:00	10.08.2021 12:00	204551	102					
1703	Aspvreten 26		Outdoor	30.04.2021 12:00	10.08.2021 12:00	210874	102	17.0	0.24			
1703	Aspvreten 26			30.04.2021 12:00	10.08.2021 12:00	214256	102	17.0				0.09
1703	Aspvreten 26		Outdoor	30.04.2021 12:00	10.08.2021 12:00	215735	102	17.0		0.95		
1703	Aspvreten 26			10.08.2021 12:00	02.11.2021 09:00	204583	84					
1703	Aspvreten 26			10.08.2021 12:00	02.11.2021 09:00	227268	84	7.4				0.04
1703	Aspvreten 26		Outdoor	10.08.2021 12:00	02.11.2021 09:00	230482	84	7.4	0.27			
1703	Aspvreten 26		Outdoor	10.08.2021 12:00	02.11.2021 09:00	230634	84	7.4		1.2		

1761	Berlin			06.12.2020 15:00	16.03.2021 10:30	191356	100					
1761	Berlin			06.12.2020 15:00	16.03.2021 10:30	193993	100	2.2				0.09
1761	Berlin		Outdoor	06.12.2020 15:00	16.03.2021 10:30	198154	100	2.2	0.65			
1761	Berlin		Outdoor	06.12.2020 15:00	16.03.2021 10:30	200841	100	2.2		29		
1761	Berlin			16.03.2021 11:00	16.06.2021 10:30	204557	92					
1761	Berlin		Outdoor	16.03.2021 11:00	16.06.2021 10:30	210872	92	10.7	0.87			
1761	Berlin		Outdoor	16.03.2021 11:00	16.06.2021 10:30	212278	92	10.7		12		
1761	Berlin			16.03.2021 11:00	16.06.2021 10:30	214260	92	10.7				0.23
1761	Berlin			16.06.2021 11:00	16.09.2021 11:00	204568	92					
1761	Berlin		Outdoor	16.06.2021 11:00	16.09.2021 11:00	222922	92	17.2	0.13			
1761	Berlin		Outdoor	16.06.2021 11:00	16.09.2021 11:00	223945	92	17.2		18		
1761	Berlin			16.06.2021 11:00	16.09.2021 11:00	226735	92	17.2				0.34
1761	Berlin			16.09.2021 11:30	16.12.2021 11:30	191321	91					
1761	Berlin		Outdoor	16.09.2021 11:30	16.12.2021 11:30	193860	91	8.5		22		
1761	Berlin			16.09.2021 11:30	16.12.2021 11:30	194000	91	8.5				0.17
1761	Berlin		Outdoor	16.09.2021 11:30	16.12.2021 11:30	194428	91	8.5	0.76			
1761	Berlin			16.12.2021 11:30	16.03.2022 11:45	191355	90					
1699	Birkenes 23			28.10.2020 10:00	28.01.2021 14:00	191372	92					
1699	Birkenes 23			28.10.2020 10:00	28.01.2021 14:00	193981	92	2.5				0.03
1699	Birkenes 23			28.01.2021 14:00	28.04.2021 13:45	191332	90					
1699	Birkenes 23			28.01.2021 14:00	28.04.2021 13:45	202717	90	1.1				0.04
1699	Birkenes 23			28.04.2021 13:45	28.07.2021 05:00	202752	91	9.5				0.12
1699	Birkenes 23			28.04.2021 13:45	28.07.2021 05:00	204547	91					
1699	Birkenes 23			28.07.2021 05:00	10.11.2021 09:55	204573	105					
1699	Birkenes 23			28.07.2021 05:00	10.11.2021 09:55	219237	105	11.6				0.07
1722	Bottrop 10			06.10.2020 10:30	06.01.2021 13:43	194003	92	8.5				0.16
1722	Bottrop 10			06.10.2020 10:43	06.01.2021 13:44	191362	92					
1722	Bottrop 10			06.01.2021 13:47	31.03.2021 07:38	191343	84					
1722	Bottrop 10			06.01.2021 13:49	31.03.2021 07:35	202721	84	5.3				0.18
1722	Bottrop 10			31.03.2021 07:37	23.06.2021 07:39	214243	84	12.9				0.46
1722	Bottrop 10			31.03.2021 07:40	23.06.2021 07:41	204565	84					
1722	Bottrop 10			23.06.2021 07:40	15.09.2021 07:29	226732	84	18.6				0.41
1722	Bottrop 10			23.06.2021 07:43	15.09.2021 07:30	204579	84					

1695	Casaccia 14			14.12.2020 15:15	22.03.2021 12:35	191317	98					
1695	Casaccia 14		Outdoor	14.12.2020 15:15	22.03.2021 12:35	193886	98	8.5		7.7		
1695	Casaccia 14			14.12.2020 15:15	22.03.2021 12:35	193973	98	8.5				0.20
1695	Casaccia 14		Outdoor	14.12.2020 15:15	22.03.2021 12:35	194430	98	8.5	0.38			
1695	Casaccia 14			22.03.2021 12:40	17.06.2021 13:35	191348	87					
1695	Casaccia 14		Outdoor	22.03.2021 12:40	17.06.2021 13:35	198115	87	16.0	0.38			
1695	Casaccia 14			22.03.2021 12:40	17.06.2021 13:35	202742	87	16.0				0.28
1695	Casaccia 14		Outdoor	22.03.2021 12:40	17.06.2021 13:35	203456	87	16.0		2.9		
1695	Casaccia 14			17.06.2021 13:40	21.09.2021 14:24	204555	96					
1695	Casaccia 14		Outdoor	17.06.2021 13:40	21.09.2021 14:24	210922	96	24.4	0.39			
1695	Casaccia 14		Outdoor	17.06.2021 13:40	21.09.2021 14:24	212268	96	24.4		2.2		
1695	Casaccia 14			17.06.2021 13:40	21.09.2021 14:24	214246	96	24.4				0.45
1695	Casaccia 14			21.09.2021 14:34	16.12.2021 14:15	204577	86					
1695	Casaccia 14			21.09.2021 14:34	16.12.2021 14:15	219235	86	14.4				0.21
1695	Casaccia 14		Outdoor	21.09.2021 14:34	16.12.2021 14:15	222847	86	14.4	0.38			
1695	Casaccia 14		Outdoor	21.09.2021 14:34	16.12.2021 14:15	223882	86	14.4		6.7		
1711	Chaumont 45		Outdoor	20.10.2020 11:00	09.02.2021 15:30	188002	112	1.4			0.97	
1711	Chaumont 45		Outdoor	20.10.2020 11:00	09.02.2021 15:30	191041	112	1.4	0.21			
1711	Chaumont 45			20.10.2020 11:00	09.02.2021 15:30	191359	112					
1711	Chaumont 45		Outdoor	20.10.2020 11:00	09.02.2021 15:30	193911	112	1.4		1.2		
1711	Chaumont 45			20.10.2020 11:00	09.02.2021 15:30	193975	112	1.4				0.11
1711	Chaumont 45		Outdoor	20.10.2020 11:00	09.02.2021 15:30	194369	112	1.4				
1711	Chaumont 45			09.02.2021 15:30	28.04.2021 10:15	191350	78					
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.04.2021 10:15	198142	78	3.0	0.33			
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.04.2021 10:15	202678	78	3.0			3.6	
1711	Chaumont 45			09.02.2021 15:30	28.04.2021 10:15	202707	78	3.0				0.25
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.04.2021 10:15	203467	78	3.0		1.7		
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.04.2021 10:15	203514	78	3.0				
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.07.2021 10:00	210880	169	7.7	0.16			
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.07.2021 10:00	212272	169	7.7		0.49		
1711	Chaumont 45			09.02.2021 15:30	28.07.2021 10:00	214270	169	7.7				0.10
1711	Chaumont 45		Outdoor	09.02.2021 15:30	28.07.2021 10:00	214322	169	7.7				
1711	Chaumont 45			28.04.2021 10:20	28.07.2021 10:00	204553	91					
1711	Chaumont 45			28.07.2021 10:00	03.11.2021 10:40	204585	98					
1711	Chaumont 45		Outdoor	28.07.2021 10:00	03.11.2021 10:40	222878	98	11.2	0.21			
1711	Chaumont 45		Outdoor	28.07.2021 10:00	03.11.2021 10:40	223883	98	11.2		1.5		
1711	Chaumont 45			28.07.2021 10:00	03.11.2021 10:40	224846	98	11.2				0.19
1711	Chaumont 45		Outdoor	28.07.2021 10:00	03.11.2021 10:40	226241	98	11.2			1.4	
1711	Chaumont 45		Outdoor	28.07.2021 10:00	03.11.2021 10:40	226698	98	11.2				

1726	Hämeenlinna 57		Outdoor	02.11.2020 11:15	25.01.2021 12:00	191067	84	-0.1	0.43			
1726	Hämeenlinna 57			02.11.2020 11:15	25.01.2021 12:00	191363	84					
1726	Hämeenlinna 57		Outdoor	02.11.2020 11:15	25.01.2021 12:00	193938	84	-0.1		5.9		
1726	Hämeenlinna 57			02.11.2020 11:15	25.01.2021 12:00	193971	84	-0.1				0.19
1726	Hämeenlinna 57			25.01.2021 13:00	04.05.2021 13:00	191344	99					
1726	Hämeenlinna 57		Outdoor	25.01.2021 13:00	04.05.2021 13:00	198108	99	-1.3	0.30			
1726	Hämeenlinna 57		Outdoor	25.01.2021 13:00	04.05.2021 13:00	200839	99	-1.3		5.8		
1726	Hämeenlinna 57			25.01.2021 13:00	04.05.2021 13:00	202720	99	-1.3				0.14
1726	Hämeenlinna 57			04.05.2021 13:00	04.08.2021 15:00	204563	92					
1726	Hämeenlinna 57		Outdoor	04.05.2021 13:00	04.08.2021 15:00	210871	92	17.0	0.27			
1726	Hämeenlinna 57		Outdoor	04.05.2021 13:00	04.08.2021 15:00	212281	92	17.0		2.4		
1726	Hämeenlinna 57			04.05.2021 13:00	04.08.2021 15:00	214253	92	17.0				0.23
1726	Hämeenlinna 57			04.08.2021 15:00	04.11.2021 12:00	204571	92					
1726	Hämeenlinna 57		Outdoor	04.08.2021 15:00	04.11.2021 12:00	222849	92	9.9	0.25			
1726	Hämeenlinna 57		Outdoor	04.08.2021 15:00	04.11.2021 12:00	223913	92	9.9		3.7		
1726	Hämeenlinna 57			04.08.2021 15:00	04.11.2021 12:00	226729	92	9.9				0.10
1693	Kopisty 3			28.10.2020 12:00	01.01.2021 12:00	191370	65					
1693	Kopisty 3			28.10.2020 12:00	01.01.2021 12:00	193976	65	3.7				0.25
1693	Kopisty 3			01.02.2021 12:00	25.04.2021 12:00	191330	83					
1693	Kopisty 3			01.02.2021 12:00	25.04.2021 12:00	202713	83	2.5				0.25
1693	Kopisty 3			25.04.2021 12:00	03.07.2021 16:05	202745	69	15.5				0.56
1693	Kopisty 3			03.07.2021 16:20	11.11.2021 14:00	204582	131					
1693	Kopisty 3			03.07.2021 16:20	11.11.2021 14:00	219236	131	14.2				0.29
1704	Madrid 31			06.11.2020 12:00	03.02.2021 12:00	191367	89					
1704	Madrid 31			06.11.2020 12:00	03.02.2021 12:00	193977	89	6.7				0.12
1704	Madrid 31			03.02.2021 12:00	10.05.2021 12:00	191338	96					
1704	Madrid 31			03.02.2021 12:00	10.05.2021 12:00	202709	96	11.0				0.38
1704	Madrid 31			10.05.2021 12:00	24.08.2021 12:00	202712	106	22.3				0.91
1704	Madrid 31			10.05.2021 12:00	24.08.2021 12:00	204545	106					
1704	Madrid 31			24.08.2021 12:00	18.11.2021 12:00	204580	86					
1704	Madrid 31			24.08.2021 12:00	18.11.2021 12:00	224848	86	17.5				0.71

1696	Milan 15			17.12.2020 11:45	24.03.2021 10:50	191349	97					
1696	Milan 15			17.12.2020 11:45	24.03.2021 10:50	193986	97	7.8				<0.006
1696	Milan 15			24.03.2021 10:52	23.06.2021 10:45	191318	91					
1696	Milan 15			24.03.2021 10:52	23.06.2021 10:45	202738	91	17.8				0.95
1696	Milan 15			23.06.2021 10:50	23.09.2021 10:30	204554	92					
1696	Milan 15			23.06.2021 10:50	23.09.2021 10:30	214268	92	24.8				1.48
1696	Milan 15			23.09.2021 10:34	09.12.2021 10:21	204569	77					
1696	Milan 15			23.09.2021 10:34	09.12.2021 10:21	224845	77	12.6				0.38
1700	Oslo-Sköyen 21			22.10.2020 12:10	22.01.2021 14:00	194001	92	2.1				0.05
1700	Oslo-Sköyen 21			30.10.2020 10:00	01.02.2021 09:30	191374	94					
1700	Oslo-Sköyen 21			22.01.2021 14:24	23.04.2021 09:30	191335	91					
1700	Oslo-Sköyen 21			22.01.2021 14:24	23.04.2021 09:30	202714	91	1.0				0.07
1700	Oslo-Sköyen 21			23.04.2021 09:30	21.07.2021 21:50	202700	90	14.7				0.17
1700	Oslo-Sköyen 21			23.04.2021 09:30	21.07.2021 21:50	204546	90					
1700	Oslo-Sköyen 21			21.07.2021 21:55	02.11.2021 11:00	204574	104					
1700	Oslo-Sköyen 21			21.07.2021 21:55	02.11.2021 11:00	224851	104	13.3				0.13
1709	Paris 40		Outdoor	28.10.2020 14:30	04.02.2021 14:30	191037	99	7.7	0.37			
1709	Paris 40			28.10.2020 14:30	04.02.2021 14:30	191358	99					
1709	Paris 40		Outdoor	28.10.2020 14:30	04.02.2021 14:30	193934	99	7.7		23		
1709	Paris 40			28.10.2020 14:30	04.02.2021 14:30	194015	99	7.7				0.11
1709	Paris 40			04.02.2021 14:30	11.05.2021 14:00	191340	96					
1709	Paris 40		Outdoor	04.02.2021 14:30	11.05.2021 14:00	198095	96	9.6	0.42			
1709	Paris 40		Outdoor	04.02.2021 14:30	11.05.2021 14:00	200820	96	9.6		16		
1709	Paris 40			04.02.2021 14:30	11.05.2021 14:00	202727	96	9.6				0.27
1709	Paris 40			11.05.2021 12:00	11.08.2021 12:25	204543	92					
1709	Paris 40		Outdoor	11.05.2021 12:00	11.08.2021 12:25	210898	92	19.0	0.29			
1709	Paris 40		Outdoor	11.05.2021 12:00	11.08.2021 12:25	212266	92	19.0		1.2		
1709	Paris 40			11.05.2021 12:00	11.08.2021 12:25	214265	92	19.0				0.52
1709	Paris 40			11.08.2021 12:30	29.10.2021 14:30	204587	79					
1709	Paris 40			11.08.2021 12:30	29.10.2021 14:30	219243	79	17.1				0.49
1709	Paris 40		Outdoor	11.08.2021 12:30	29.10.2021 14:30	222875	79	17.1	0.31			
1709	Paris 40		Outdoor	11.08.2021 12:30	29.10.2021 14:30	223877	79	17.1		17		

1692	Prague 1			29.10.2020 12:00	01.01.2021 12:00	191369	64					
1692	Prague 1			29.10.2020 12:00	01.01.2021 12:00	194004	64	5.7				0.24
1692	Prague 1			01.01.2021 12:00	13.04.2021 12:00	191329	102					
1692	Prague 1			01.01.2021 12:00	13.04.2021 12:00	202725	102	3.7				0.19
1692	Prague 1			13.04.2021 12:00	01.07.2021 00:00	202706	79	16.2				0.70
1692	Prague 1			13.04.2021 12:00	01.07.2021 00:00	204549	79					
1692	Prague 1			01.07.2021 12:00	12.11.2021 12:00	224842	134	16.4				0.51
1694	Rome 13		Outdoor	15.12.2020 12:20	23.03.2021 09:30	193901	98	10.1		23		
1694	Rome 13			15.12.2020 12:20	23.03.2021 09:30	194010	98	10.1				0.13
1694	Rome 13		Outdoor	15.12.2020 12:20	23.03.2021 09:30	194435	98	10.1	0.36			
1694	Rome 13			23.03.2021 09:30	16.06.2021 10:30	191347	85					
1694	Rome 13		Outdoor	23.03.2021 09:30	16.06.2021 10:30	198099	85	17.2	0.45			
1694	Rome 13			23.03.2021 09:30	16.06.2021 10:30	202760	85	17.2				0.55
1694	Rome 13		Outdoor	23.03.2021 09:30	16.06.2021 10:30	203488	85	17.2		12		
1694	Rome 13			16.06.2021 10:33	22.09.2021 10:02	204556	98					
1694	Rome 13		Outdoor	16.06.2021 10:33	22.09.2021 10:02	210881	98	26.1	0.42			
1694	Rome 13		Outdoor	16.06.2021 10:33	22.09.2021 10:02	212271	98	26.1		11		
1694	Rome 13			16.06.2021 10:33	22.09.2021 10:02	214259	98	26.1				0.85
1694	Rome 13			22.09.2021 10:06	16.12.2021 09:55	204578	85					
1694	Rome 13			22.09.2021 10:06	16.12.2021 09:55	219246	85	15.4				0.31
1694	Rome 13		Outdoor	22.09.2021 10:06	16.12.2021 09:55	222876	85	15.4	0.27			
1694	Rome 13		Outdoor	22.09.2021 10:06	16.12.2021 09:55	223905	85	15.4		23		
1727	Split 60		Outdoor	29.10.2020 14:30	29.01.2021 14:30	191006	92	11.1	0.83			
1727	Split 60			29.10.2020 14:30	29.01.2021 14:30	191364	92					
1727	Split 60		Outdoor	29.10.2020 14:30	29.01.2021 14:30	193888	92	11.1		11		
1727	Split 60			29.10.2020 14:30	29.01.2021 14:30	194005	92	11.1				0.27
1727	Split 60			29.01.2021 14:30	29.04.2021 14:30	191345	90					
1727	Split 60		Outdoor	29.01.2021 14:30	29.04.2021 14:30	198147	90	11.1	0.95			
1727	Split 60			29.01.2021 14:30	29.04.2021 14:30	202701	90	11.1				0.35
1727	Split 60		Outdoor	29.01.2021 14:30	29.04.2021 14:30	203471	90	11.1		5.4		
1727	Split 60			29.04.2021 14:35	29.07.2021 14:40	204562	91					
1727	Split 60		Outdoor	29.04.2021 14:35	29.07.2021 14:40	210861	91	24.4	0.53			
1727	Split 60		Outdoor	29.04.2021 14:35	29.07.2021 14:40	212285	91	24.4		4.2		
1727	Split 60			29.04.2021 14:35	29.07.2021 14:40	214271	91	24.4				0.61
1727	Split 60			29.07.2021 14:40	29.10.2021 14:40	204584	92					
1727	Split 60		Outdoor	29.07.2021 14:40	29.10.2021 14:40	222882	92	19.0	1.55			
1727	Split 60		Outdoor	29.07.2021 14:40	29.10.2021 14:40	223878	92	22.5		5.4		
1727	Split 60			29.07.2021 14:40	29.10.2021 14:40	226733	92	22.5				0.73

1701	Stockholm 24		Outdoor	30.10.2020 10:00	01.02.2021 09:30	191060	94	4.8	0.43			
1701	Stockholm 24		Outdoor	30.10.2020 10:00	01.02.2021 09:30	193423	94	4.8		9.3		
1701	Stockholm 24			30.10.2020 10:00	01.02.2021 09:30	193980	94	4.8				0.21
1701	Stockholm 24			30.10.2020 10:00	01.02.2021 09:30	191373	94					
1701	Stockholm 24			01.02.2021 09:40	07.05.2021 10:00	191333	95					
1701	Stockholm 24			01.02.2021 09:40	07.05.2021 10:00	194021	95	3.3				0.14
1701	Stockholm 24		Outdoor	01.02.2021 09:40	07.05.2021 10:00	198138	95	3.3	0.31			
1701	Stockholm 24		Outdoor	01.02.2021 09:40	07.05.2021 10:00	200816	95	3.3		6.9		
1701	Stockholm 24			07.05.2021 10:00	12.08.2021 09:15	204552	97					
1701	Stockholm 24			07.05.2021 10:00	12.08.2021 09:15	214252	97	15.8				0.43
1701	Stockholm 24		Outdoor	07.05.2021 10:00	12.08.2021 09:15	215531	97	15.8	0.36			
1701	Stockholm 24		Outdoor	07.05.2021 10:00	12.08.2021 09:15	215748	97	15.8		3.3		
1701	Stockholm 24			12.08.2021 09:15	02.11.2021 11:30	204589	82					
1701	Stockholm 24			12.08.2021 09:15	02.11.2021 11:30	227261	82	12.0				0.21
1701	Stockholm 24		Outdoor	12.08.2021 09:15	02.11.2021 11:30	230465	82	12.0	0.39			
1701	Stockholm 24		Outdoor	12.08.2021 09:15	02.11.2021 11:30	230641	82	12.0		7.2		
1698	Svanvik 44			01.11.2020 12:00	01.02.2021 14:00	191371	92					
1698	Svanvik 44			01.11.2020 12:00	01.02.2021 14:00	193995	92	-1.2				0.09
1698	Svanvik 44			01.02.2021 12:00	03.05.2021 12:00	191331	91					
1698	Svanvik 44			01.02.2021 12:00	03.05.2021 12:00	202718	91	-4.2				0.05
1698	Svanvik 44			03.05.2021 12:00	01.08.2021 11:20	202759	90	6.4				0.05
1698	Svanvik 44			03.05.2021 12:00	01.08.2021 11:20	204566	90					
1698	Svanvik 44			01.08.2021 11:20	01.11.2021 08:30	204581	92					
1698	Svanvik 44			01.08.2021 11:20	01.11.2021 08:30	224843	92	10.7				0.03
1708	Toledo 33			09.11.2020 12:00	03.02.2021 12:00	191357	86					
1708	Toledo 33			09.11.2020 12:00	03.02.2021 12:00	193972	86	7.4				0.13
1708	Toledo 33			03.02.2021 12:00	10.05.2021 12:00	191339	96					
1708	Toledo 33			03.02.2021 12:00	10.05.2021 12:00	202703	96	11.2				0.15
1708	Toledo 33			10.05.2021 12:00	24.08.2021 12:00	214258	106	24.6				0.43
1708	Toledo 33			24.08.2021 12:00	18.11.2021 12:00	224844	86	18.7				0.36
1816	West Haven			05.10.2020 15:40	26.01.2021 10:30	191320	113					
1816	West Haven			05.10.2020 15:40	26.01.2021 10:30	193992	113	7.3				0.14
1816	West Haven			26.01.2021 10:27	03.05.2021 14:37	191319	97					
1816	West Haven			26.01.2021 10:27	03.05.2021 14:37	193983	97	12.5				0.29
1816	West Haven			03.05.2021 14:37	22.09.2021 17:03	204560	142					
1816	West Haven			03.05.2021 14:37	22.09.2021 17:03	214249	142	27.1				0.46
1816	West Haven			22.09.2021 17:06	16.02.2022 11:30	191351	147					
1816	West Haven			22.09.2021 17:06	16.02.2022 11:30	202699	147	15.2				0.13

1710	Vienna 53		Outdoor	08.11.2020 10:05	05.02.2021 10:30	191010	89	3.4	0.70			
1710	Vienna 53			08.11.2020 10:05	05.02.2021 10:30	191360	89					
1710	Vienna 53		Outdoor	08.11.2020 10:05	05.02.2021 10:30	193869	89	3.4		17		
1710	Vienna 53			08.11.2020 10:05	05.02.2021 10:30	193982	89	3.4				0.20
1710	Vienna 53			05.02.2021 10:35	07.05.2021 11:10	191341	91					
1710	Vienna 53		Outdoor	05.02.2021 10:35	07.05.2021 11:10	198153	91	6.6	0.46			
1710	Vienna 53		Outdoor	05.02.2021 10:35	07.05.2021 11:10	200826	91	6.6		9.2		
1710	Vienna 53			05.02.2021 10:35	07.05.2021 11:10	202711	91	6.6				0.36
1710	Vienna 53			07.05.2021 11:10	11.08.2021 10:45	204542	96					
1710	Vienna 53		Outdoor	07.05.2021 11:10	11.08.2021 10:45	210891	96	20.0	0.40			
1710	Vienna 53		Outdoor	07.05.2021 11:10	11.08.2021 10:45	212295	96	20.0		3.6		
1710	Vienna 53			07.05.2021 11:10	11.08.2021 10:45	214248	96	20.0				0.66
1710	Vienna 53			11.08.2021 10:45	15.12.2021 11:00	204586	126					
1710	Vienna 53		Outdoor	11.08.2021 10:45	15.12.2021 11:00	222900	126	11.4	0.72			
1710	Vienna 53		Outdoor	11.08.2021 10:45	15.12.2021 11:00	223939	126	11.4		10		
1710	Vienna 53			11.08.2021 10:45	15.12.2021 11:00	224849	126	11.4				0.40
1728	Zagreb 61		Outdoor	20.11.2020 14:00	20.02.2021 14:00	193926	92	4.2		23		
1728	Zagreb 61			20.11.2020 14:00	20.02.2021 14:00	193988	92	4.2				0.20
1728	Zagreb 61		Outdoor	20.11.2020 14:00	20.02.2021 14:00	194433	92	4.2	0.78			
1728	Zagreb 61			20.02.2021 14:05	20.05.2021 14:05	191346	89					
1728	Zagreb 61		Outdoor	20.02.2021 14:05	20.05.2021 14:05	198086	89	9.4	0.28			
1728	Zagreb 61			20.02.2021 14:05	20.05.2021 14:05	202750	89	9.4				0.20
1728	Zagreb 61		Outdoor	20.02.2021 14:05	20.05.2021 14:05	203462	89	9.4		14		
1728	Zagreb 61			20.05.2021 14:10	20.08.2021 14:10	204561	92					
1728	Zagreb 61		Outdoor	20.05.2021 14:10	20.08.2021 14:10	210859	92	22.1	0.27			
1728	Zagreb 61		Outdoor	20.05.2021 14:10	20.08.2021 14:10	212290	92	22.1		7.9		
1728	Zagreb 61			20.05.2021 14:10	20.08.2021 14:10	214251	92	23.5				>19.0
1728	Zagreb 61			20.05.2021 14:10	20.06.2021 14:10	233881	31	19.0				0.63
1728	Zagreb 61			20.08.2021 14:15	20.11.2021 14:20	204576	92					
1728	Zagreb 61		Outdoor	20.08.2021 14:15	20.11.2021 14:20	222897	92	13.2	0.35			
1728	Zagreb 61		Outdoor	20.08.2021 14:15	20.11.2021 14:20	223870	92	13.2		14		
1728	Zagreb 61			07.09.2021 00:00	20.11.2021 14:20	226730	75	11.6				0.81
	Stop time changed by NILU from 16.10.2021 to 16.09.2021											
	Start adjusted by NILU from 01.04 til 01.02: Result divided by three					0						

Appendix D

Annual average values for particle deposition (per month) and for concentrations of SO_2, NO_2, NH_3, O_3, and HNO_3 (pr. year) measured with IVL samplers for the exposure period

Table D.1: Annual average particle deposition (per month - sheltered from rain)

Particles		mass	Cl^-	NO_3^-	SO_4^{2-}	NH_4^+	Ca^{2+}	Mg^{2+}	Na^+	K^+
No	Years	µg cm^{-2} $month^{-1}$								
01	20/21	5	0.11	0.21	0.12					
03	20/21	11	0.09	0.17	0.45					
10	20/21	18	0.06	0.13	0.32		0.18	0.02	0.06	0.03
13	20/21	43	2.32	0.86	0.56					
14	20/21	41	2.97	0.77	0.86					
15	20/21	15	0.05	0.38	0.13					
16	20/21									
21	20/21	7	0.20	0.13	0.05					
23	20/21	5	0.56	0.12	0.12					
24	20/21	16	0.36	0.35	0.23					
26	20/21	1	0.03	0.07	0.02					
31	20/21	12	0.08	0.32	0.13					
33	20/21	12	0.08	0.28	0.12					
35	20/21									
40	20/21	11	0.32	0.41	0.21					
41	20/21	139	14.81	0.83	1.93					
44	20/21	4	0.11	0.05	0.06					
45	20/21	9	0.03	0.06	0.03		0.14	0.01	0.02	0.02
50	20/21									
51	20/21	53	3.80	0.93	1.32		2.91	0.34	2.05	0.15
53	20/21	7	0.06	0.27	0.13					
57	20/21	7	0.04	0.10	0.05					
58	20/21	18	2.80	0.67	0.38					
59	20/21									
60	20/21	17	1.95	0.76	0.64					
61	20/21	201	0.27	0.39	0.15					
	Missing									

Table D.2: Annual average concentration of gases (µg m^{-3})

Station no	Years	SO2	NO2	NH3	O3	HNO3
		µg/m3 STP				
01	20/21					0.42
03	20/21					0.32
10	20/21					0.30
13	20/21	0.4	17.4		55	0.46
14	20/21	0.4	4.9		70	0.29
15	20/21					0.71
16	20/21					
21	20/21				39	0.11
23	20/21				52	0.06
24	20/21	0.4	6.4		56	0.25
26	20/21	0.2	1.4		43	0.07
31	20/21					0.54
33	20/21					0.27
35	20/21					
40	20/21	0.3	14.5		51	0.34
41	20/21	0.6	20.3		34	0.20
44	20/21				58	0.06
45	20/21	0.2	1.1	1.8	72	0.15
50	20/21					
51	20/21					0.78
53	20/21	0.6	9.9		56	0.41
57	20/21	0.3	4.4		53	0.13
58	20/21					0.26
59	20/21					
60	20/21	1.0	6.4		75	0.49
61	20/21	0.4	15.2		44	0.41
	Missing					

Appendix E

Data availability

Table E.1: Data availability - local data (%)

Station no	Mandatory									Optional				
	Climate		Gases (concentration)				Precipitation			Precipitation			Particles	Total global irradiation
	Temp	RH	SO_2	NO_2	O_3	HNO_3	Amount	H^+	Cl^-	Conduc-tivity	SO_4^{2-}	NO_3^-	PM_{10} (Conc)	(285 to 3000 nm)
	availability (%)													
01	100	100	100	100	100	0	100	100	100	100	100	100	100	17
03	100	100	100	100	100	0	100	92	92	92	92	92	100	0
10	99	99	96	95	95	0	100	100	100	100	100	100	98	100
13	A	A	0	0	0	0	A	0	0	0	0	0	0	0
14	100	100	0	0	0	0	99	0	0	0	0	0	0	0
15	99	99	99	97	99	0	100	0	0	0	0	0	93	0
16	98	98	0	85	0	0	98	0	0	0	0	0	90	0
21	Ap	Ap	100	100	0	0	100	93	93	93	93	93	91	0
23	96	96	99	99	99	99	100	97	99	99	99	99	86	0
24	A	A	0	0	0	0	A	A	A	0	0	0	0	0
26	A	A	0	0	0	0	A	A	A	0	0	0	0	0
31	99	100	99	98	98	0	100	100	100	77	77	77	100	100
33	97	97	98	97	97	0	100	100	100	100	100	100	95	97
35	100	100	100	100	100	100	100	100	100	100	100	100	100	0
40	100	100	88	65	90	0	100	100	100	0	100	100	52	100
41	A	0	0	0	0	0	0	0	0	0	0	0	0	0
44	100	100	99	100	0	0	97	98	99	98	99	99	0	0
45	100	100	0	98	98	0	100	0	0	0	0	0	98	0
50	100	100	100	100	100	0	100	0	0	0	0	0	0	0
51	100	100	100	81	99	0	A	A2	0	0	0	0	3	0
53	A	A	99	100	100	0	A	0	0	0	0	0	100	0
57	100	100	0	100	0	0	100	100	100	0	0	0	100	100
58	A	0	0	0	0	0	0	0	0	0	0	0	0	0
59	100	100	100	100	100	0	100	100	100	0	0	0	100	0
60	100	100	100	100	0	0	100	100	100	100	100	100	100	0
61	100	100	100	100	100	0	100	100	100	100	100	100	100	0

Ap = Approved by the reporting authority

A = Data available. The % availability was not reported

A2 = Available in 2 months

Table E.2: Data availability – IVL data (%)

Station no	SO2	NO2	NH3	O3	HNO3	Particle deposition total mass and ions
01					100	67
03					95	76
10					94	94
13	100	100		100	100	73
14	100	100		100	100	100
15					98	98
16						
21				86	100	100
23				100	100	100
24	100	100		74	100	100
26	100	100		76	100	100
31					100	100
33					100	50
35						
40	100	100		100	100	73
41	100	100		80	100	100
44				100	100	100
45	100	100	100	100	100	100
50						
51					100	100
53	100	100		100	100	100
57	100	100		100	100	100
58					100	81
59						
60	100	100		75	100	100
61	100	96		100	79	75

Appendix F

Data sources and acknowledgements to data

			2. Acknowledgemenets	Blanc:reported in 2020-21	Gray shaded: reported in 2014-15	Yellow: reported in 2017-18
1	Prague	1	SVUOM passive sampling. Czech meteo station 1-2 km away from exposure rack.			
		2				
3	Kopisty	1	SVUOM passive sampling. Kopisty meteo station (where the material exposures are performed)			
		2				
10	Bottrop	1	Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen (LANUV): meterology, gases, rain amount, PM10 / Deutsches Bergbau-Museum Bochum: precepitation data			
		2	Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen (LANUV)			
13	Rome	1	Meteoclimatic parameters: SIARL - Servizio Integrato Agrometeorologico della Regione Lazio http://www.arsial.it.			
		2				
14	Casaccia	1	ENEA ISER-CAS. "Stazione meteorologica Casaccia". http://meteo.casaccia.enea.it			
		2				
15	Milan	1				
		2	ARPA Lombardia - Agenzia Regionale per la Protezione dell'Ambiente della Lombardia - U.O. Qualità dell'Aria (SO2, NO2, O3, PM10) - U.O. Servizio Idro-Nivo-Meteo e Clima			
16	Venice	1	NO2, PM10: ARPAV - Agenzia Regionale per la Prevenzione e Protezione Ambientale del Veneto. Meteoclimatic parameters: Ente della Zona Industriale di Porto Marghera			
		2				
21	Oslo	1	All parameterswere measured by NILU at the Skøyen station, except Temp. and RH and Prec amount (mm) which were measured by the Norwegian Meteorological Institute at the Blindern station 3.5 km from Skøyen to the north east			
		2	NILU-Norwegian Institute for air research; Temperature and RH: The Norwegian Meteorological Institute, Met.no, eklima (http://sharki.oslo.dnmi.no/)			
23	Birkenes	1	All parameters were measured by NILU at the Birkenes station. The gases were measued to the Birkense observatory about 100 m distance and 50m elevation from the samples. O3 was corrected according to O3 old/new Birkenes 2010 = 0.76			
		2	NILU-Norwegian Institute for air research; Temperature and RH for August 2015: The Norwegian Meteorological Institute, Met.no, eklima (http://sharki.oslo.dnmi.no/)			
24	Stockholm South	1	All reported parameters delivered by Lars Burman, SLB analysis (Stockholm Air and Noise Analysis), Stockholm Environmental Administration			
		2	SLB analysis (Stockholm Air and Noise Analysis), Stockholm Environmental Administration			
26	Aspvreten	1	Data for Aspvreten (-2017) delivered by Zahra Hamzavi, Department of Environmental Science and Analytical Chemistry, Stockholm University. Data for other stations (2018-) from Department of Environmental Science and Analytical Chemistry, Stockholm University. Swedish Environmental Protection agency and County Administrative Board of Södermanland. IVL Swedish Environmental Research Institute			
		2				
31	Madrid	1	Ministry for the Ecological Transition (MITECO); Air Quality Madrid Regional Goverment (CAM)			
		2	Ministry for the Ecological Transition (MITECO); Air Quality Madrid Regional Goverment (CAM); Carlos III Health Institute (ISCIII)			
33	Toledo	1	AEMET-Spanish Meteorological State Agency			
		2	AEMET-Spanish Meteorological State Agency			
35	Lahemaa	1	All parameters were measured by EERC at the Lahemaa station			
		2	Estonian Environmental Research Centre- EERC			

40	Paris	1	Temp, RH and Amount of precipitation are Meteofrance data; pH and precipitation composition are measured in LISA (by Ion chromatography); Gases and PM10 by IVL
		2	
41	Berlin	1	Before 2016: All data except "H+ - pH" is from "Senatsverwaltung für Stadtentwicklung und Umwelt Berlin", "H+ - pH" is from "Rathgen-Forschungslabor Berlin"; From 2016 the T and RH and rain amount (mm) are from the meteorological station 403 Berlin-Dahlem (FU). Ph was measured by HTW Berlin
		2	See above
44	Svanvik	1	All parameters were measured by NILU at the Svanvik station.
		2	NILU-Norwegian Institute for air research
45	Chaumont	1	All gases, particles and precipitations was measured by Empa, all climate data (Temp, RH) was measured by MeteoSchweiz
		2	Empa data: NABEL (BAFU and Empa), data of MeteoSchweiz: MeteoSchweiz
50	Katowice	1	All meteorlogical parameters were mesured by Institute of Meteorology and Water Management National Research Institute in Poland. All pollution parameters were measured by Main Inspectorate of Environmental Protection in Poland
		2	All meteorlogical parameters were mesured by Institute of Meteorology and Water Management National Research Institute in Poland. All pollution parameters
51	Athens	1	SO2,NO2,O3 & PM10: measured by National Network for Atmospheric Pollution Monitoring (NNAPM), Ministry of Environmemt & Energy/ Temp, RH, Rain: measured by National Observatory of Athens (NOA)
		2	SO2,NO2,O3 & PM10: NNAPM, Ministry of Environmemt & Energy/ Temp, RH, Rain: NOA
53	Vienna¨	1	The measurements are mede by the ZAMG (Zentralanstalt für Meteorologie und Geodynamik = Central Institute for Meteorology and Geodynamics, Hohe Warte 38, 1190
		2	
57	Hämeenlinna	1	Parameters measured by HAMK & KVVY (pH & Cl-), City of Hämeenlinna (NO2 and PM10), Finnish Meteorological Institute (temp, RH, precipitation amount)
		2	Finnish Meteorological Institute
58	New Haven	1	Temperature, RH, and Precipitation parameters obtained from NOAA Local Climatological Data, New Haven Tweed Airport, CT, US (41.26389°, -72.88722°), 8.44 kilometers from collection site.
		2	NOAA - National Oceanic and Atmospheric Administration
59	Žilina	1	Research Centre of University of Žilina, Slovakia;Slovak Hydrometeorological institute (SHMÚ) and Faculty of Civil Engineering, University of Žilina, Slovakia.
		2	Research Centre of University of Žilina, Slovakia;Slovak Hydrometeorological institute (SHMÚ) and Faculty of Civil Engineering, University of Žilina, Slovakia.
60	Split	1	Precipitation samples are collected on Split-Marjan station (about 3 km away from 60-Split) and analysed by Croatian Meteorological and Hydrological Service; PM10, SO2 and NO2 are measured on Split-1 location (about 1 km away from 60-Split); data will be available on the Croatian Agency for Environment and Nature (CAEN) web pages in may and will be sent soon after that; O3 is not measured in Split; Geographical coordinates: 60-Split 43.511667N 16.464852E, ST-1 43.510653N 16.449342E, ST-Marjan 43.508333N 16.426389E.
		2	Croatian Meteorological and Hydrological Service and Croatian Agency for Environment and Nature (CAEN)
61	Zagreb	1	All parameters measured by Croatian Meteorological and Hydrological Service; PM10, SO2 and NO2 measured on Zagreb-2 station (about 200 m away from 61-Zagreb; O3 measured on Zagreb-3 station (about 5 km away from 61-Zagreb). Geographical coordinates: 61, Zagreb: 45.8219N 16.0331E, ZG-2: 45.8237N 16.0358E, ZG-3: 45.7816N 16.0065E
		2	Croatian Meteorological and Hydrological Service and Croatian Agency for Environment and Nature (CAEN)

Appendix G
National contact centres

Member	Role
Mrs Katerina Kreislova SVUOM Ltd. U Mestanského Pivovaru 934 /4 CZ-17000 PRAHA 7 Czech Republic +420 220 809 981 kreislova@svuom.cz	Sub-centre (steel) Test site 1 Test site 3
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Mrs. Teresa La Torretta ENEA SSPT-MET-INAT Via Martiri di Monte Sole 4 40129 Bologna Italy teresa.latorretta@enea.it	Co-chair Sub-centre (cultural heritage) Test site 13 Test site 14 Test site 15 Test site 16
Dr. 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 P. O. Box 7047 SE – 16407 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) (The responsibility for limestone is to be transferred to Aurelie Verney-Carron, Paris – see below)
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Member	Role
The contacts in Berlin were at the time of reporting uncertain.	
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Ulrik Hans Empa Joining technology and Corrosion Ueberlandstrasse 129 CH-8600 Dübendorf Switzerland ulrik.hans@empa.ch	Sub-centre (zinc) Test site 45
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Member	Role
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NILU – Norwegian Institute for Air Research

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