# AirBase version 8 data products on EEA data service

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## 1. Introduction

AirBase is a public air quality database containing air quality monitoring information for about 40 countries throughout Europe. The list of countries included in AirBase is available as Annex A.
The complete list of available components is given as Annex B. AirBase version 8 data products are available through the EEA data service at:
http://www.eea.europa.eu/data-and-maps/data/airbase-the-european-air-quality-database-8

General AirBase meta-information and links to further information on legal background (EoI decision) and annual data collection process are available at the indicated URL. The objective of the present document is not to repeat information available elsewhere but to describe the most relevant technical details of AirBase data products in order to facilitate their usage.

In case of any questions related to AirBase data products, please contact: david.simoens@eea.europa.eu

## 2. What's new in AirBase version 8 data products?

- Availability of the latest air quality data from the EoI2013 delivery (including data for 2012).
- Availability of three air quality stations registered for Kosovo under UNSCR 1244/99.
- Eleven new component codes compared to AirBase version 7.

| component_code | component_caption | component_name |
|---|---|---|
| 83 | cis-H3C-HC=CH-CH2-CH3 | cis-2-Pentene (air) |
| 5480 | Benzo(bj)fluoranthene in PM10 | Benzo(bj)fluoranthene in PM10 (aerosol) |
| 637 | Dibenzo(ah)pyrene | Dibenzo(ah)pyrene (air+aerosol) |
| 1013 | Hg in PM2.5 | Mercury in PM2.5 (aerosol) |
| 5017 | Mn in PM10 | Manganese in PM10 (aerosol) |
| 5063 | Zn in PM10 | Zinc in PM10 (aerosol) |
| 5073 | Cu in PM10 | Copper in PM10 (aerosol) |
| 78 | C6H4-(CH3)2 | Xylene (air) |
| 5065 | Fe in PM10 | Iron in PM10 (aerosol) |
| 633 | Dibenz(ac+ah)anthracenes | Dibenz(ac+ah)anthracenes (air+aerosol) |
| 5016 | Cr in PM10 | Chromium in PM10 (aerosol) |

## 3. European data set

*a) Data available in CSV format*

AirBase_v8_stations.csv
Table with meta-information on AirBase stations (8 626 records). Station identifier and primary key for this table is: station_european_code. The information covers, among others: station_name, station_local_code, station_altitude, type_of_station, station_type_of_area and station co-ordinates.

AirBase_v8_statistics.csv
Table with annual statistics calculated from AirBase data (3 284 764 records). Relevant fields with statistical information are: statistic_name; statistic_value; statistics_percentage_valid and statistics_number_valid.

The primary key for this table is the combination of station_european_code, component_code, measurement_european_group_code, statistics_year, statistic_name, statistics_average_group. The latter field describes the data type, on which the statistics are based. The majority of statistics (>95%) is based on hourly or daily data, or on daily maximum (dymax) values. A smaller number of statistics is available for the following periods: 2day, 3day, 2week, 2month, 3month, 4week, month, var (i.e. variable), week and year.

A 1-to-many relationship between station and statistics tables can be established by using the station identifier: station_european_code.

A 1-to-many relationship between statistics and measurement_configuration tables can be established by using the fields station_european_code, component_code and measurement_european_group_code.

AirBase_v8_measurement_configurations.csv
Table with measurement configurations (59 675 records), describing the conditions under which a component is measured at the station. The information covers, among others: measurement_technique_principle, measurement_equipment, measurement_start_date, measurement_automatic, sampling_time_unit, integration_time_unit, calibration_frequency and calibration_method.

The primary key for this table is the combination of station_european_code, component_code and measurement_european_code.

Technical details of the CSV format
The above tables are available as UTF-8 encoded text files. Field delimiter is a tab character (U+0009), records end with carriage return + line feed characters (U+000D, U+000A). A header row with field names is always included. Numerical values use the dot as decimal separator. There is no qualifier for string values.

*b) Data available in XML format*

AirBase_v8_xmldata.zip:
This zip archive contains 1 XML file per country with meta-information on networks, stations and measurement configurations. The XML files also include all statistical values. A description of the document structure in AirBase XML files including a list of legal elements and attributes is available in form of a XML schema (XSD), the schema is declared within each XML files and can be found at:
http://acm.eionet.europa.eu/schemas/airbase/airbase20100623.xsd

All tables mentioned in section 3a) have been directly generated from the XML files. Data extraction has been done by using XSLT (Extensible Stylesheet Language Transformations). The XSLT stylesheet that has been used for extracting statistical values (i.e. for generating AirBase_v8_statistics.csv) is given in Annex C. Another option for extracting data from the XML files is to use the Excel macros as available on ETC/ACC website. More information on how to extract data from the XML files can be made available on demand.

AirBase_v8_stations.kmz:
This KMZ archive shows AirBase stations locations and characteristics as station_european_code, station_local_code, station name, station_start_date, station_end_date, type_of_station, station_type_of_area. Stations are categorized by country within separate folders. The KMZ file can be open in many earth browser applications as for example Google Earth.

**4. Data by country (including raw data)**

This section on EEA data service contains one zip archive per country with data in CSV and XML format, as explained in section 2. Country data files have been generated by splitting the European data sets into "slices" for individual countries. There is no other difference between country data and European data sets.

The country zip archives also include raw data files. These are organised in text files, each one representing 1 time series of data. All necessary meta-information about the time series is included in the file name, e.g.:

FR240130000700100hour.1-12-1999.4-10-2012

Position 1 – 7 station_european_code (here: FR24013)
Position 8 – 12 component_code (here: 00007, i.e. Ozone)
Position 13 – 17 measurement_european_group_code (here: 00100)
Position 18 until first dot: data type (here: hour)
followed by start date and end date of the time series

Data types in raw data file names correspond to the statistics_average_group values as used in the statistics tables, (see section 3a).

Raw data files are tab-delimited text files. The general format of hourly and daily raw data files is as follows:

Date Value1 Flag1 Value2 Flag2 Value3 Flag3 Value4 Flag4 ..... ValueN FlagN

Hourly data (data type: hour and hour8)

The date in column 1 identifies the calendar day to which the record relates. Measurement values 1...24 and quality flags 1...24 in columns 2-49 correspond to the hours of that date. Value 1 is understood to represent the measurements during the first hour of the day (i.e.: 00:00-00:59), and so on.

Raw data files with data type hour8 contain running 8-hour means calculated from the corresponding hourly data. Their format is identical to hourly data, with 24 values and 24 flags per day. However, any hour8 value represents the mean of hourly values in the preceding 8-hour period. E.g. hour8 value 10 is based on hourly va lues 3...10 of the same day, the averaging period for hour8 value 1 starts on 17:00H of the preceding day.

Daily data (data type: day and dymax)

The date in column 1 identifies the calendar month to which the record relates. Measurement values 1...31 and quality flags 1...31 in columns 2-63 correspond to the days of that month. All records have 31 values and 31 flags. For months with less than 31 days, the records are filled with invalid data.

Raw data files with data type dymax contain daily maximum values, based on running 8-hour means (see above). Both hour8 and dymax data files are only available for ozone and CO.

Quality flags in raw data
Flag values indicate the quality of the preceding measurement value. A quality flag value > 0 indicates valid measurement data. A quality flag <= 0 indicates invalid or missing data.

**Annex A: Country codes, names and share in AirBase statistic data**

| code | country_name | %data | #components |
|---|---|---|---|
| AL | Albania | 0.0% | 8 |
| AT | Austria | 7.0% | 38 |
| BA | Bosnia and Herzegovina | 0.1% | 8 |
| BE | Belgium | 3.8% | 71 |
| BG | Bulgaria | 0.6% | 23 |
| CH | Switzerland | 1.7% | 19 |
| CY | Cyprus | 0.1% | 42 |
| CZ | Czech Republic | 3.4% | 19 |
| DE | Germany | 21.8% | 95 |
| DK | Denmark | 0.6% | 52 |
| EE | Estonia | 0.3% | 14 |
| ES | Spain | 14.6% | 99 |
| FI | Finland | 0.9% | 68 |
| FR | France | 11.0% | 17 |
| GB | United Kingdom | 6.2% | 115 |
| GR | Greece | 0.9% | 19 |
| HR | Croatia | 0.1% | 9 |
| HU | Hungary | 0.6% | 40 |
| IE | Ireland | 0.4% | 52 |
| IS | Iceland | 0.1% | 18 |
| IT | Italy | 11.7% | 42 |
| LI | Liechtenstein | 0.0% | 5 |
| LT | Lithuania | 0.4% | 67 |
| LU | Luxembourg | 0.2% | 17 |
| LV | Latvia | 0.2% | 43 |
| ME | Montenegro | 0.0% | 7 |
| MK | Macedonia - FYR of | 0.4% | 10 |
| MT | Malta | 0.1% | 36 |
| NL | Netherlands | 3.0% | 105 |
| NO | Norway | 0.5% | 19 |
| PL | Poland | 3.3% | 71 |
| PT | Portugal | 1.9% | 30 |
| RO | Romania | 1.3% | 22 |
| RS | Serbia | 0.2% | 9 |
| SE | Sweden | 0.7% | 57 |
| SI | Slovenia | 0.4% | 31 |
| SK | Slovakia | 0.7% | 15 |
| TR | Turkey | 0.4% | 2 |

N.B.

| | |
|---|---|
| code | country_iso_code as used in AirBase |
| %data | relative share of country data in AirBase data, 0.0 means less than 0.05% |
| #components | number of components available in AirBase data |

Andorra and Kosovo under UNSCR 1244/99 are missing in the above table, as no measurement data are available. However, three air quality stations are registered in AirBase for both of these countries.

## Annex B: AirBase component codes, names, units and relative share in Airbase statistic data

| code | component_name | measurement_unit | FWD | %data | #country |
|---|---|---|---|---|---|
| 1 | Sulphur dioxide (air) | µg/m3 | yes | 15.9% | 36 |
| 3 | Strong acidity (air) | µg SO2/m3 | no | 0.4% | 7 |
| 4 | Total suspended particulates (aerosol) | µg/m3 | yes | 1.5% | 17 |
| 5 | Particulate matter < 10 µm (aerosol) | µg/m3 | yes | 9.9% | 38 |
| 6 | Black smoke (air) | µg/m3 | yes | 0.7% | 15 |
| 7 | Ozone (air) | µg/m3 | yes | 19.2% | 37 |
| 8 | Nitrogen dioxide (air) | µg/m3 | yes | 16.0% | 37 |
| 9 | Nitrogen oxides (air) | µg NO2/m3 | yes | 8.5% | 37 |
| 10 | Carbon monoxide (air) | mg/m3 | yes | 7.9% | 36 |
| 11 | Hydrogen sulphide (air) | µg/m3 | no | 0.1% | 7 |
| 12 | Lead (aerosol) | µg/m3 | yes | 0.5% | 24 |
| 13 | Mercury (aerosol) | ng/m3 | yes | 0.0% | 6 |
| 14 | Cadmium (aerosol) | ng/m3 | yes | 0.4% | 24 |
| 15 | Nickel (aerosol) | ng/m3 | yes | 0.3% | 23 |
| 16 | Chromium (aerosol) | ng/m3 | no | 0.0% | 3 |
| 17 | Manganese (aerosol) | ng/m3 | no | 0.0% | 3 |
| 18 | Arsenic (aerosol) | ng/m3 | yes | 0.3% | 22 |
| 19 | Carbon disulphide (air) | µg/m3 | no | 0.0% | 1 |
| 20 | Benzene (air) | µg/m3 | yes | 1.6% | 34 |
| 21 | Toluene (air) | µg/m3 | no | 0.7% | 24 |
| 22 | Styrene (air) | µg/m3 | no | 0.0% | 2 |
| 24 | 1.3 Butadiene (air) | µg/m3 | no | 0.1% | 8 |
| 25 | Formaldehyde (air) | µg/m3 | no | 0.0% | 2 |
| 26 | Trichloroethylene (air) | µg/m3 | no | 0.0% | 1 |
| 27 | Tetrachloroethylene (air) | µg/m3 | no | 0.0% | 1 |
| 30 | Polyaromatic hydrocarbons (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 32 | Total non-methane hydrocarbons (air) | µg C/m3 | no | 0.1% | 6 |
| 33 | Total volatile organic compounds (air) | µg/m3 | no | 0.1% | 4 |
| 34 | Peroxyacetyl nitrate (air) | µg/m3 | no | 0.0% | 1 |
| 35 | Ammonia (air) | µg/m3 | no | 0.1% | 7 |
| 36 | Wet nitrogen deposition (flux) | mg N/m2.m | no | 0.0% | 1 |
| 37 | Wet sulphur deposition (flux) | mg S/m2.m | no | 0.0% | 2 |
| 38 | Nitrogen monoxide (air) | µg/m3 | no | 7.9% | 29 |
| 39 | Hydrogen chloride (air) | µg/m3 | no | 0.0% | 1 |
| 40 | Hydrogen fluoride (air) | µg/m3 | no | 0.0% | 1 |
| 41 | Methane (air) | µg/m3 | no | 0.1% | 5 |
| 45 | Particulate ammonium (aerosol) | µg/m3 | no | 0.0% | 2 |
| 46 | Particulate nitrate (aerosol) | µg/m3 | no | 0.0% | 2 |
| 47 | Particulate sulphate (aerosol) | µg/m3 | no | 0.0% | 8 |
| 48 | Selenium (aerosol) | ng/m3 | no | 0.0% | 1 |
| 49 | Vanadium (aerosol) | ng/m3 | no | 0.0% | 2 |
| 51 | HC C2-C6(excl. AROM. & CHLH) (air+aerosol) | µg/m3 | no | 0.0% | 1 |
| 63 | Zinc (aerosol) | ng/m3 | no | 0.0% | 3 |

N.B.
code component_code as used in AirBase
FWD = yes mandatory pollutant, component_FWD as used in AirBase
%data relative share of component in AirBase data, 0.0 means less than 0.05%
#countries number of countries reporting this component

The component names in this table include both, the actual pollutant name and the matrix in which the concentrations are measured.

**Annex B: AirBase component codes, names, units and relative share in Airbase statistic data (cont'd)**

| code | component_name | measurement_unit | FWD | %data | #country |
|---|---|---|---|---|---|
| 65 | Iron (aerosol) | ng/m3 | no | 0.0% | 2 |
| 67 | Total nitrate (air+aerosol) | µg N/m3 | no | 0.0% | 2 |
| 68 | Total ammonium (air+aerosol) | µg N/m3 | no | 0.0% | 2 |
| 69 | Radioactivity () | NULL | no | 0.0% | 1 |
| 71 | Carbon dioxide (air) | ppmv | no | 0.0% | 1 |
| 73 | Copper (aerosol) | ng/m3 | no | 0.0% | 2 |
| 78 | Xylene (air) | µg/m3 | no | 0.0% | 1 |
| 83 | cis-2-Pentene (air) | µg/m3 | no | 0.0% | 1 |
| 316 | i-Hexane (2-methylpentane) (air) | µg/m3 | no | 0.0% | 8 |
| 323 | N3methylpentane (air) | pptv | no | 0.0% | 1 |
| 351 | acenaphthene (air+aerosol) | ng/m3 | no | 0.0% | 4 |
| 352 | acenaphtylene (air+aerosol) | ng/m3 | no | 0.0% | 3 |
| 380 | Benzo(b+j+k)fluoranthenes (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 381 | Benzo(e)pyrene (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 391 | black_carbon (aerosol) | µg/m3 | no | 0.0% | 1 |
| 394 | n-Butane (air) | µg/m3 | no | 0.1% | 10 |
| 412 | conductivity (precip) | uS/cm | no | 0.0% | 1 |
| 416 | cyclohexane (air) | pptv | no | 0.0% | 1 |
| 425 | dinitrogenoxide (air) | ppbv | no | 0.0% | 1 |
| 428 | Ethane (air) | µg/m3 | no | 0.0% | 9 |
| 430 | Ethene (Ethylene) (air) | µg/m3 | no | 0.0% | 8 |
| 431 | Ethyl benzene (air) | µg/m3 | no | 0.2% | 18 |
| 432 | Ethyne (Acetylene) (air) | µg/m3 | no | 0.0% | 7 |
| 435 | fluorene (air+aerosol) | ng/m3 | no | 0.0% | 4 |
| 441 | n-Heptane (air) | µg/m3 | no | 0.1% | 11 |
| 443 | n-Hexane (air) | µg/m3 | no | 0.1% | 11 |
| 447 | i-Butane (2-methylpropane) (air) | µg/m3 | no | 0.1% | 10 |
| 449 | i-Octane (2,2,4-trimethylpentane) (air) | µg/m3 | no | 0.0% | 8 |
| 450 | i-Pentane (2-methylbutane) (air) | µg/m3 | no | 0.1% | 11 |
| 451 | Isoprene (2-methyl-1,3-butadiene) (air) | µg/m3 | no | 0.1% | 9 |
| 464 | m,p-Xylene (air) | µg/m3 | no | 0.3% | 20 |
| 465 | naphtalene (air+aerosol) | ng/m3 | no | 0.0% | 3 |
| 475 | n-Octane (air) | µg/m3 | no | 0.1% | 9 |
| 482 | o-Xylene (air) | µg/m3 | no | 0.3% | 18 |
| 486 | n-Pentane (air) | µg/m3 | no | 0.1% | 12 |
| 503 | Propane (air) | µg/m3 | no | 0.0% | 9 |
| 505 | Propene (air) | µg/m3 | no | 0.0% | 9 |
| 520 | sum_sulph_diox_sulphate (air+aerosol) | µg S/m3 | no | 0.0% | 1 |
| 604 | aluminium (aerosol) | ng/m3 | no | 0.0% | 1 |
| 606 | anthracene (air+aerosol) | ng/m3 | no | 0.0% | 4 |
| 608 | anthracene (precip+dry_dep) | µg/m2/day | no | 0.0% | 1 |
| 609 | Benzo(a)anthracene (air+aerosol) | ng/m3 | no | 0.0% | 4 |
| 611 | Benzo(a)anthracene (precip+dry_dep) | µg/m2/day | no | 0.0% | 7 |
| 616 | Benzo(b)fluoranthene (air+aerosol) | ng/m3 | no | 0.0% | 3 |
| 618 | Benzo(b)fluoranthene (precip+dry_dep) | µg/m2/day | no | 0.0% | 3 |
| 622 | Benzo(ghi)perylene (air+aerosol) | ng/m3 | no | 0.0% | 5 |
| 624 | Benzo(ghi)perylene (precip+dry_dep) | µg/m2/day | no | 0.0% | 1 |
| 625 | Benzo(k)fluoranthene (air+aerosol) | ng/m3 | no | 0.0% | 3 |

**Annex B: AirBase component codes, names, units and relative share in Airbase statistic data (cont'd)**

| code | component_name | measurement_unit | FWD | %data | #country |
|---|---|---|---|---|---|
| 627 | Benzo(k)fluoranthene (precip+dry_dep) | µg/m2/day | no | 0.0% | 4 |
| 629 | calcium (aerosol) | µg/m3 | no | 0.0% | 1 |
| 630 | calcium (precip) | mg/l | no | 0.0% | 1 |
| 631 | chloride (aerosol) | µg/m3 | no | 0.0% | 1 |
| 632 | chloride (precip) | mg/l | no | 0.0% | 1 |
| 633 | Dibenz(ac+ah)anthracenes (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 637 | Dibenzo(ah)pyrene (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 643 | fluoranthene (air+aerosol) | ng/m3 | no | 0.1% | 5 |
| 645 | fluoranthene (precip+dry_dep) | µg/m2/day | no | 0.0% | 1 |
| 648 | acidity(H+) (precip) | ue H/l | no | 0.0% | 1 |
| 653 | reactive_mercury (air+aerosol) | ng/m3 | no | 0.0% | 3 |
| 654 | indeno_123cd_pyrene (air+aerosol) | ng/m3 | no | 0.0% | 3 |
| 656 | indeno_123cd_pyrene (precip+dry_dep) | µg/m2/day | no | 0.0% | 7 |
| 658 | potassium (precip) | mg/l | no | 0.0% | 1 |
| 659 | magnesium (aerosol) | µg/m3 | no | 0.0% | 1 |
| 660 | magnesium (precip) | mg/l | no | 0.0% | 1 |
| 664 | ammonium (precip) | mg N/l | no | 0.0% | 1 |
| 666 | nitrate (precip) | mg N/l | no | 0.0% | 1 |
| 668 | sodium (aerosol) | µg/m3 | no | 0.0% | 1 |
| 669 | sodium (precip) | mg/l | no | 0.0% | 1 |
| 673 | PCB_114 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 674 | PCB_118 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 677 | PCB_138 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 679 | PCB_141 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 680 | PCB_153 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 683 | PCB_157 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 684 | PCB_167 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 685 | PCB_170 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 686 | PCB_180 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 689 | PCB_183 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 690 | PCB_187 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 691 | PCB_189 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 692 | PCB_194 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 695 | PCB_28 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 701 | PCB_52 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 706 | PCB_74 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 707 | PCB_99 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 709 | PCB_123 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 712 | phenanthrene (air+aerosol) | ng/m3 | no | 0.0% | 4 |
| 714 | phenanthrene (precip+dry_dep) | µg/m2/day | no | 0.0% | 1 |
| 715 | pyrene (air+aerosol) | ng/m3 | no | 0.1% | 4 |
| 717 | pyrene (precip+dry_dep) | µg/m2/day | no | 0.0% | 1 |
| 719 | sulphate (precip) | mg S/l | no | 0.0% | 1 |
| 728 | vanadium (precip) | µg/l | no | 0.0% | 1 |
| 753 | precipitation_amount (precip) | mm | no | 0.0% | 1 |
| 754 | precipitation_amount_off (precip) | mm | no | 0.0% | 1 |
| 760 | Benzo(j)fluoranthene (precip+dry_dep) | µg/m2/day | no | 0.0% | 3 |
| 762 | Benzo(j)fluoranthene (air+aerosol) | ng/m3 | no | 0.0% | 2 |

**Annex B: AirBase component codes, names, units and relative share in Airbase statistic data (cont'd)**

| code | component_name | measurement_unit | FWD | %data | #country |
|---|---|---|---|---|---|
| 763 | Dibenzo(ah)anthracene (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 1012 | Lead in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 1013 | Mercury in PM2.5 (aerosol) | ng/m3 | no | 0.0% | 2 |
| 1014 | Cadmium in PM2.5 (aerosol) | ng/m3 | no | 0.0% | 2 |
| 1015 | Nickel in PM2.5 (aerosol) | ng/m3 | no | 0.0% | 2 |
| 1018 | Arsenic in PM2.5 (aerosol) | ng/m3 | no | 0.0% | 2 |
| 1029 | Benzo(a)pyrene in PM2.5 (aerosol) | ng/m3 | no | 0.0% | 2 |
| 1045 | Ammonium in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1046 | Nitrate in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1047 | sulphate in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1063 | Zinc in PM2.5 (aerosol) | ng/m3 | no | 0.0% | 1 |
| 1629 | calcium in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1631 | chloride in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1657 | potassium in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1659 | magnesium in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1668 | sodium in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 12 |
| 1771 | Elemental carbon in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 10 |
| 1772 | Organic carbon in PM2.5 (aerosol) | µg/m3 | no | 0.0% | 11 |
| 2012 | Lead (precip) | µg/l | no | 0.0% | 1 |
| 2013 | Mercury (precip) | ng/l | no | 0.0% | 3 |
| 2014 | Cadmium (precip) | µg/l | no | 0.0% | 3 |
| 2015 | Nickel (precip) | µg/l | no | 0.0% | 3 |
| 2016 | Chromium (precip) | µg/l | no | 0.0% | 1 |
| 2018 | Arsenic (precip) | µg/l | no | 0.0% | 3 |
| 2063 | Zinc (precip) | µg/l | no | 0.0% | 1 |
| 2064 | Cobalt (precip) | µg/l | no | 0.0% | 1 |
| 2065 | Iron (precip) | µg/l | no | 0.0% | 1 |
| 2073 | Copper (precip) | µg/l | no | 0.0% | 1 |
| 2076 | acidity(pH) (precip) | pH units | no | 0.0% | 3 |
| 3012 | Lead in TSP (aerosol) | µg/m3 | no | 0.1% | 2 |
| 3014 | Cadmium in TSP (aerosol) | ng/m3 | no | 0.1% | 2 |
| 3015 | Nickel in TSP (aerosol) | ng/m3 | no | 0.1% | 2 |
| 3018 | Arsenic in TSP (aerosol) | ng/m3 | no | 0.0% | 2 |
| 4013 | Elemental Gaseous Mercury (air+aerosol) | ng/m3 | no | 0.0% | 5 |
| 4330 | PCB_105 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 4336 | PCB_149 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 4339 | PCB_156 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 4341 | PCB_18 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 4347 | PCB_31 (air+aerosol) | pg/m3 | no | 0.0% | 1 |
| 4406 | chrysene (air+aerosol) | ng/m3 | no | 0.1% | 5 |
| 4813 | Total gaseous mercury (air+aerosol) | ng/m3 | no | 0.0% | 7 |
| 5012 | Lead in PM10 (aerosol) | µg/m3 | no | 0.3% | 10 |
| 5013 | Mercury in PM10 (aerosol) | ng/m3 | no | 0.0% | 2 |
| 5014 | Cadmium in PM10 (aerosol) | ng/m3 | no | 0.4% | 12 |
| 5015 | Nickel in PM10 (aerosol) | ng/m3 | no | 0.3% | 12 |
| 5016 | Chromium in PM10 (aerosol) | ng/m3 | no | 0.0% | 1 |
| 5017 | Manganese in PM10 (aerosol) | ng/m3 | no | 0.0% | 1 |
| 5018 | Arsenic in PM10 (aerosol) | ng/m3 | no | 0.3% | 12 |

**Annex B: AirBase component codes, names, units and relative share in Airbase statistic data (cont'd)**

| code | component_name | measurement_unit | FWD | %data | #country |
|---|---|---|---|---|---|
| 5029 | Benzo(a)pyrene in PM10 (aerosol) | ng/m3 | no | 0.4% | 21 |
| 5045 | Ammonium in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5046 | Nitrate in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5047 | sulphate in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5063 | Zinc in PM10 (aerosol) | ng/m3 | no | 0.0% | 1 |
| 5065 | Iron in PM10 (aerosol) | ng/m3 | no | 0.0% | 1 |
| 5073 | Copper in PM10 (aerosol) | ng/m3 | no | 0.0% | 1 |
| 5129 | Benzo(a)pyrene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 2 |
| 5380 | Benzo(b,j,k)fluoranthene in PM10 (aerosol) | ng/m3 | no | 0.0% | 5 |
| 5419 | Dibenzo(ah)anthracene in PM10 (aerosol) | ng/m3 | no | 0.1% | 16 |
| 5480 | Benzo(bj)fluoranthene in PM10 (aerosol) | ng.m-3 | no | 0.0% | 1 |
| 5609 | Benzo(a)anthracene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 2 |
| 5610 | Benzo(a)anthracene in PM10 (aerosol) | ng/m3 | no | 0.1% | 16 |
| 5616 | Benzo(b)fluoranthene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 5617 | Benzo(b)fluoranthene in PM10 (aerosol) | ng/m3 | no | 0.1% | 12 |
| 5625 | Benzo(k)fluoranthene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 2 |
| 5626 | Benzo(k)fluoranthene in PM10 (aerosol) | ng/m3 | no | 0.1% | 13 |
| 5629 | calcium in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5631 | chloride in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5654 | indeno_123cd_pyrene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 3 |
| 5655 | indeno_123cd_pyrene in PM10 (aerosol) | ng/m3 | no | 0.1% | 15 |
| 5657 | potassium in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5659 | magnesium in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5668 | sodium in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5759 | Benzo(j)fluoranthene in PM10 (aerosol) | ng/m3 | no | 0.1% | 6 |
| 5762 | Benzo(j)fluoranthene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 2 |
| 5763 | Dibenzo(ah)anthracene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 2 |
| 5771 | Elemental carbon in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 5772 | Organic carbon in PM10 (aerosol) | µg/m3 | no | 0.0% | 2 |
| 6001 | Particulate matter < 2.5 µm (aerosol) | µg/m3 | yes | 1.4% | 33 |
| 6002 | Particulate matter < 1 µm (aerosol) | µg/m3 | no | 0.0% | 4 |
| 6005 | 1-Butene (air) | µg/m3 | no | 0.1% | 10 |
| 6006 | trans-2-Butene (air) | µg/m3 | no | 0.1% | 8 |
| 6007 | cis-2-Butene (air) | µg/m3 | no | 0.1% | 8 |
| 6008 | 1-Pentene (air) | µg/m3 | no | 0.0% | 9 |
| 6009 | 2-Pentenes (air) | µg/m3 | no | 0.1% | 7 |
| 6011 | 1,2,4-Trimethylbenzene (air) | µg/m3 | no | 0.0% | 11 |
| 6012 | 1,2,3-Trimethylbenzene (air) | µg/m3 | no | 0.0% | 10 |
| 6013 | 1,3,5-Trimethylbenzene (air) | µg/m3 | no | 0.1% | 12 |
| 6015 | Benzo(a)pyrene (air+aerosol) | ng/m3 | no | 0.1% | 11 |
| 6380 | Benzo(b,j,k)fluoranthene in PM10 (air+aerosol) | ng/m3 | no | 0.0% | 1 |
| 7012 | Lead (precip+dry_dep) | µg/m2/day | no | 0.0% | 2 |
| 7013 | Mercury (precip+dry_dep) | µg/m2/day | no | 0.0% | 6 |
| 7014 | Cadmium (precip+dry_dep) | µg/m2/day | no | 0.1% | 10 |
| 7015 | Nickel (precip+dry_dep) | µg/m2/day | no | 0.1% | 10 |
| 7018 | Arsenic (precip+dry_dep) | µg/m2/day | no | 0.1% | 10 |
| 7029 | Benzo(a)pyrene (precip+dry_dep) | µg/m2/day | no | 0.0% | 8 |
| 7380 | Benzo(b,j,k)fluoranthene (precip+dry_dep) | µg/m2/day | no | 0.0% | 4 |
| 7407 | chrysene_triphenylene (precip+dry_dep) | µg/m2/day | no | 0.0% | 1 |
| 7419 | Dibenzo(ah)anthracene (precip+dry_dep) | µg/m2/day | no | 0.0% | 6 |

## Annex C: XSLT Stylesheet for extracting annual statistics from XML files

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">
<!-- Stylesheet created by David Simoens EEA, March 2009 -->
<!-- Variable definition for tab delimited output -->
<xsl:variable name="newline" select="'&#x0A;'"/>
<xsl:variable name="tab" select="'&#x09;'"/>
<xsl:output method="text" encoding="UTF-8"/>

<xsl:template match="/">

   <!-- Write out field names -->
   <xsl:text>station_european_code</xsl:text>             <xsl:value-of select="$tab"/>
   <xsl:text>component_code</xsl:text>                  <xsl:value-of select="$tab"/>
   <xsl:text>component_name</xsl:text>                  <xsl:value-of select="$tab"/>
   <xsl:text>component_caption</xsl:text>               <xsl:value-of select="$tab"/>
   <xsl:text>measurement_unit</xsl:text>                   <xsl:value-of select="$tab"/>
   <xsl:text>measurement_european_group_code</xsl:text>    <xsl:value-of select="$tab"/>
   <xsl:text>statistics_period</xsl:text>               <xsl:value-of select="$tab"/>
   <xsl:text>statistics_year</xsl:text>                    <xsl:value-of select="$tab"/>
   <xsl:text>statistics_average_group</xsl:text>           <xsl:value-of select="$tab"/>
   <xsl:text>statistic_shortname</xsl:text>                <xsl:value-of select="$tab"/>
   <xsl:text>statistic_name</xsl:text>                  <xsl:value-of select="$tab"/>
   <xsl:text>statistic_value</xsl:text>                    <xsl:value-of select="$tab"/>
   <xsl:text>statistics_percentage_valid</xsl:text>        <xsl:value-of select="$tab"/>
   <xsl:text>statistics_number_valid</xsl:text>         <xsl:value-of select="$tab"/>
   <xsl:text>statistics_calculated</xsl:text>              <xsl:value-of select="$newline"/>

   <xsl:apply-templates select="airbase/country/station/measurement_configuration"/>

</xsl:template>

<!-- Loop through the measurement configurations -->
<xsl:template match="measurement_configuration">
   <xsl:param name="station_european_code" select="../station_european_code"/>
   <xsl:param name="component_code" select="component_code"/>
   <xsl:param name="component_name" select="component_name"/>
   <xsl:param name="component_caption" select="component_caption"/>
   <xsl:param name="measurement_unit" select="measurement_unit"/>
   <xsl:param name="measurement_european_group_code" select="measurement_info/measurement_european_code"/>

   <!-- Loop through the statistic results -->
   <xsl:for-each select="statistics/statistics_average_group/statistic_set/statistic_result">
      <xsl:value-of select="$station_european_code"/>            <xsl:value-of select="$tab"/>
      <xsl:value-of select="$component_code"/>                  <xsl:value-of select="$tab"/>
      <xsl:value-of select="$component_name"/>                  <xsl:value-of select="$tab"/>
      <xsl:value-of select="$component_caption"/>               <xsl:value-of select="$tab"/>
      <xsl:value-of select="$measurement_unit"/>                <xsl:value-of select="$tab"/>
      <xsl:value-of select="$measurement_european_group_code"/>     <xsl:value-of select="$tab"/>
      <xsl:value-of select="../../statistics_period"/>          <xsl:value-of select="$tab"/>
      <xsl:value-of select="../../../@Year"/>                   <xsl:value-of select="$tab"/>
      <xsl:value-of select="../../@value"/>                     <xsl:value-of select="$tab"/>
      <xsl:value-of select="statistic_shortname"/>           <xsl:value-of select="$tab"/>
      <xsl:value-of select="statistic_name"/>                   <xsl:value-of select="$tab"/>
      <xsl:value-of select="statistic_value"/>                  <xsl:value-of select="$tab"/>
      <xsl:value-of select="../statistics_percentage_valid"/>   <xsl:value-of select="$tab"/>
      <xsl:value-of select="../statistics_number_valid"/>       <xsl:value-of select="$tab"/>
      <xsl:value-of select="../statistics_calculated"/>         <xsl:value-of select="$newline"/>
   </xsl:for-each>

</xsl:template>
</xsl:stylesheet>
```