

Workshop proceedings

2nd EIONET workshop on air quality monitoring and assessment Brussels, 22-23 September 1997

Prepared by:

Steinar Larssen, Norwegian Institute for Air Research, Kjeller, Norway,
Charlos Potma, RIVM, Bilthoven, The Netherlands,
Rob Sluyter RIVM, Bilthoven, The Netherlands,
Ken Stevenson, AEA Technology, Culham Abingdon, U.K.

Project manager:

Gabriel Kielland
European Environment Agency



Cover design: Rolf Kuchling, EEA

Legal notice

The contents of this report do not necessarily reflect the official opinion of the European Communities or other European Communities institutions. Neither the European Environment Agency nor any person or company acting on the behalf of the Agency is responsible for the use that may be made of the information contained in this report.

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>)

©EEA, Copenhagen, 1999

Reproduction is authorised provided the source is acknowledged

Printed in Copenhagen

Printed on recycled and chlorine-free bleached paper

European Environment Agency
Kongens Nytorv 6
DK-1050 Copenhagen K
Denmark
Tel: +45 33 36 71 00
Fax: +45 33 36 71 99
E-mail: eea@eea.eu.int

Table of content

	Page
Part 1 Workshop proceedings	5
1. Introduction	6
2. Contents of this report.....	8
3. Workshop conclusions.....	9
4. Summary of the workshop proceedings	12
4.1 Status of the Eol reporting process.....	12
4.2 EUROAIRNET	12
Criteria for selection of areas and stations.....	12
Selection of stations for EUROAIRNET	14
Examples of selection of EUROAIRNET stations	14
4.3 AIRBASE	15
Current status	15
AIRBASE extensions foreseen	16
Data Exchange Module	16
AIRBADM demonstration.....	17
Data transfer. Status, recommendations.....	17
Data quality requirements for EUROAIRNET stations	18
4.4 Progress in ETC-AQ, and development towards European-scale Assessments.....	19
EIONET clients' needs, and expectations for ETC-AQ.....	19
ETC-AQ products and work plan	20
The PHARE Topic Link, PTL.....	21
European-scale assessments of air quality and effects	21
5. Concluding remarks	23
6. References	24
Annex 1 Programme	25
Annex 2 List of participants	27
Annex 3 Selected sheets from presentation: EUROAIRNET - Criteria for selection of areas and stations	32
Annex 4 Selected sheets from presentation: Examples of EUROAIRNET selection UK stations	33
Annex 5 Sheets from presentation: EIONET customer needs and expectations to ETC-AQ	34
 Part 2 AIRBASE Report: 1997 development status and extensions for- seen (Available on http://www.eea.eu.int/frdocu.htm only) ...	 35

PART 1

Workshop proceedings

1. Introduction

The second EIONET workshop on air quality monitoring assessment was organised in Brussels by the EEA European Topic Centre on Air Quality (ETC-AQ) on 22-23 September 1997.

The workshop was a part of the Topic Centre's work programme for 1997, specifically as part of the development of the EEA European air quality monitoring network (EUROAIRNET) and the development of the European air quality data base (AIRBASE). The intention was to organise the workshop in conjunction with the 1997 workshop under the Exchange of Information (EoI) Decision. That workshop was postponed, but the connection with the EoI process was taken care of by the presence of Mr. Pierre Hecq from DGXI who, at the opening session, presented the state-of-play in the EoI process.

The first workshop of the ETC-AQ was organised in Copenhagen in April 1996. It was the first meeting platform of the ETC-AQ and the EIONET network of national experts, and the objectives of that workshop were:

- to discuss position papers on Air Quality Monitoring, Modelling and Assessment, and;
- on the basis of these papers to discuss the way forward with respect to further development of networks, databases and products such as assessments of air pollution on the European scale.

At the 1996 workshop, there were working sessions on:

- criteria for the European air quality network (EUROAIRNET) and database (AIRBASE);
- assessments of air quality in Europe, based upon monitoring, modelling and its combination.

The second workshop had a more technical orientation. A draft report on the criteria for the design of EUROAIRNET had been prepared for the workshop. Also there had been active work in the ETC on the further development of AIRBASE, and a report on the present status and plans for AIRBASE was prepared for the workshop.

The workshop programme, and list of participants are annexed to this report (Annex 1 and 2 respectively).

The objectives of this second workshop were to present and discuss:

- the status of the work in the ETC on further development of the EUROAIRNET criteria and network, and of the AIRBASE database;
- the state of selection of national monitoring sites for the network;
- the foreseen near future development;
- the work plan of the ETC and the foreseen products, especially regarding the assessment of air quality on various scales in Europe.

It was particularly important to test plans against the needs and expectations of national and DGXI representatives, and receive comments, feedback and guidance. Representatives of all EEA member countries and the PHARE countries were invited to the workshop, and it was attended by 38 representatives from 27 countries (14 EEA member states and 13 PHARE countries), as well as from EC-DGXI, JRC-Ispra and the Topic Centre on Air Emissions (ETC-AE). The EEA and the ETC-AQ were represented by 8 participants.

In the *opening address*, Mr. Gordon McInnes, EEA Programme Manager for Monitoring and Databases, reminded participants about the mission of the EEA to provide timely and targeted, reliable and relevant information in support of policy and for regular reporting of the State of the Environment in Europe. In this task, the support from, and connection with, the national networks is necessary in order to provide the data needed in time for reporting and providing assessments in support of policy making. It is of major importance to improve, develop and harmonise the monitoring-to-reporting chain; each country supplies its own data from national networks as a basis for the production of reports, statistics, maps and other assessments of air quality at the European level.

2. Contents of this report

This report presents the summary and conclusions from the workshop, as well as summary of the proceedings (presentations and discussions).

The two reports sent to the participants before the 1997 workshop will be made available as follows:

- The EUROAIRNET design criteria report is available as an EEA technical report.
- The AIRBASE development status report is made available as an annex to this workshop report.

Copies of the overhead transparencies used in the presentations are included in the annexes. For the presentations which were based upon the two reports (EUROAIRNET and AIRBASE), copies are in general not included. The contents of these transparencies are to be found in the second part of this report.

3. Workshop conclusions

The four main sessions of the workshop were:

- Introductory session, which included a presentation of the status of the Exchange of Information (EoI) data reporting process;
- EUROAIRNET session: Criteria; selection of stations.
- AIRBASE session: Current status; AIRBADM; Extensions planned; Development of Data exchange module (DEM); QA/QC requirements; Data transfer status.
- Progress and development towards European-scale Assessments.

The following is the summary and conclusions from the workshop presentations and discussions:

1. The EoI data reporting status report showed that for the most recent year reported, 1995, data had been transferred to AIRBASE as follows: six Member States have transmitted SO₂, NO₂ and particles data, five MS has transmitted O₃ data, and four MS CO data. Thus, air quality data for recent years are not available in AIRBASE to an extent which supports full European assessments. The data transmission problems demonstrate the need for harmonised tools for data transmission.
2. The design criteria for the development of EUROAIRNET are made to support the emphasis of the network: To provide data suitable for assessing the air pollution exposure situation in Europe in a representative way. This is the necessary basis for assessing the actual effects of pollution as a basis for decisions on cost-efficient abatement.
3. The EUROAIRNET design criteria were discussed, and the comments from the participants led to changes in the proposed criteria, e.g. regarding the station classification scheme, and the requested time schedule for reporting.
4. The EUROAIRNET selection criteria will be the guide for actual selection of stations. At present, 17 countries have made a preliminary (more or less complete) selection of stations. A total of 457 stations have been selected and key station data provided to ETC-AQ. SO₂, NO₂ and CO are well covered, O₃ and SPM less well covered, and PM₁₀, VOC, benzene and lead is measured at only some of the stations selected so far.

The philosophy behind station selection varies between countries. For example Italy's 81 stations are mostly classified as traffic stations, while many countries have predominantly urban background sites. This difference needs to be considered, as it will introduce a bias in the network in terms of how well it will represent exposure in different countries. ETC-AQ will help ensure consistency between national selections.

This initial site selection is the basis for the first draft of a EUROAIRNET report under preparation. Further work on site selection will be done by the countries and ETC-AQ in cooperation.

5. Representatives of three countries (UK, the Netherlands, Poland) presented comments and examples of site selection.
6. The latest annual update of AIRBASE with 1995 air quality data has been provided by 12 EEA member states (of these, 8 states also provided station meta-data). These data can be accessed through the pilot Web application (<http://www.etcq.rivm.nl>).

Aggregation statistics algorithms are being included. The ETC-AQ maintains a helpdesk for users (contact e.g. through e-mail:airbase@rivm.nl).

In 1997, two Java programming pilots have been developed to build examples of data selection and visualisation extensions for AIRBASE.

7. AIRBASE extension developments also include the Data exchange module (DEM), improved web applications to improve feedback to and accessibility for users, including user defined statistics, selection from clickable maps, indicator reports, mail functionality, spreadsheet output files.
8. The DEM is being developed to greatly improve, simplify and speed up the data transfer from national data providers to AIRBASE. The DEM replaces the current AIRBADM data transfer tool. The proposed functionality was presented. DEM is being developed under the IRENIE Telematics Project, and is planned to be available by June 1998.

The basic data format will be ASCII files, but other commonly used formats will be handled as well (NASA-Ames 1010 and 1001, ISO-7168, EoI). Data security will be taken care of.

A DEM training workshop will be organised in 1998.

9. For the current 1996 EoI data transfer, countries are urged to use the AIRBADM tool. Those who have already transferred data for previous years should use the same format as before. Those countries who transfer data for the first time are requested to use the ISO-7168 or NASA Ames 1010 format.
10. Proposed QA/QC requirements to networks/stations of EUROAIRNET were presented, as further detailed in the EUROAIRNET criteria report made available during the workshop. Comments and discussion showed the importance of this topic for the countries, and led to further modification of these criteria. It is important to take better account of the development of similar procedures under other programmes and organisations, such as JRC, WHO and EMEP.
11. EEA, Commission, MS governments, NRCs, and the general public have various needs for information, data and assessments from ETC-AQ. Important messages to the ETC from the analysis of needs and expectations which was presented at the workshop, include:
 - More key facts and indicators, less technical reports: Get the message across!
 - Country comparisons are important for MS use, and for support of national enforcement.
 - Easy data flow from ETC to users across EIONET.
 - Assist countries in capacity building.
 - Analyse cost-effectiveness of monitoring and of EU policies.
12. ETC-AQ main products in 1997 include:
 - air quality reports (Air Pollution in Europe 1997, Ozone Directive reports, Guidance reports on Supplementary assessments connected to new EU directives and on urban dispersion modelling);
 - contributions to other key EEA assessment reports: the Dobris+3 report and the EU98 report (preparatory phase);

- workshops: the second workshop on Monitoring and Assessment, and one on the Model Documentation centre (MDC) of the Topic centre (held in Cambridge in September).

13. In 1998, work will continue on:
 - the EUROAIRNET/AIRBASE towards the first full data exchange and reporting;
 - the MDC towards completing the model overview/documentation;
 - contributions to main assessment studies/reports: the AutoOil II programme, the EU98 report.

14. 1998 will also see developments of EEA work programme towards the pan-European scale through the PHARE Topic Link on Air Quality, which will effectively include the 13 PHARE countries into the air quality data collection, transfer and assessment process.

15. One of the main objective of the EUROAIRNET/AIRBASE development is to provide background for the timely production of various assessments of air quality, exposure, effects and cost-efficient abatement on the European scale.

How far has the ETC come in such efforts, and which is the way forward?

The ETC collaborates with other actors (ETC-AEM, JRC, WHO-ECEH, ECE-EMEP) in producing such assessments, and the activities of the ETC should mainly be:

- evaluation of data from networks, and production of maps;
- calculation of AQ/deposition from emission data;
- calculation of effects-relevant exposures, from measured and modelled data.

16. Progress to date has been found on EUROAIRNET/AIRBASE and the MDC development, and in the guidance reports produced on the use of models (in general, and in urban areas). However, the active use of models in the assessment work needs to be prioritised within ETC-AQ if significant progress is to be made in producing area-representative exposure and effects assessments. This applies especially to the urban scale.

17. ETC-AQ is contributing to the urban modelling work taking place within the AutoOil II Programme by providing top-down modelling of emission-air pollution relationships in a number of cities. However, urban air quality modelling across European cities, based upon bottom-up mapping of emissions is also necessary to develop a proper support for policies. For this, active co-operation with the ETC-AEM is necessary, as well as model evaluation, selection and utilisation.

4. Summary of the workshop proceedings

In the following, the presentations at the workshop are summarised, as are the discussions following the presentations. From the discussions, only the main points are presented. However, all the comments and contributions from the various countries and representatives have been recorded, and are taken account of in our further work. Thus, comments not mentioned in this report are still acknowledged and used.

4.1 Status of the EoI reporting process

(P. Hecq, EC-DGXI)

Mr. Pierre Hecq presented the articles of the EoI Decision (97/101/EC) dealing with the request and transmitting of new data. Each year, new data (for the previous calendar year) shall be transmitted by October, the first transfer covering 1997. Member States (MS) are also requested to (re)transmit data for the years 1989-96. The EoI reporting only includes the EU Member States, and is thus not a pan-European process. PHARE and other countries need a similar reporting process, for their data to be available for European assessments.

Upon request from the DGXI through the ETC-AQ, some states have transmitted data for 1994 and 1995 in an effort to update the AIRBASE database. Earlier data in APIS were loaded into AIRBASE in 1995, when the first version of AIRBASE was available. Mr. Hecq gave an overview of the extent of data in AIRBASE, for the compounds SO₂ (and strong acid), particles (BS, SPM, PM₁₀), NO₂, O₃, CO, Pb, shown in Annex 1. Most MS have provided long time series of these compounds.

Regarding data for a recent year, choosing 1995, six MS have transmitted data to AIRBASE for SO₂, NO₂ and particles, five MS have transmitted O₃ data, and four MS CO data. An overview of extent of cities and stations was not shown. Thus, air quality data for recent years are not available in AIRBASE to an extent which supports truly European assessments.

The data for 1994 and 1995 were transmitted with different formats from the various countries, not according to specifications. This created a very large data transforming task for the ETC, in order to actually enter the data into AIRBASE. These data transmission problems demonstrate the need for harmonised tools for data transmission, such as the AIRBADM and DEM tools (see section on AIRBASE later).

4.2 EUROAIRNET

Criteria for selection of areas and stations

(S. Larssen, ETC-AQ)

EUROAIRNET is the acronym for the pan-European air quality monitoring network which the EEA, through ETC-AQ, is establishing in order to have timely access to Europe-wide AQ data for use in assessments. The goal, objectives and first proposal for criteria for the network were presented and discussed at the first workshop in Copenhagen in 1996 (Larssen, 1996). The network is to consist of a selection of stations from almost 5000 local AQ monitoring stations, and from about 700 regional scale monitoring stations, existing in Europe (Larssen, 1996b). The selection is to be based upon a set of criteria. A set of such criteria was proposed in a report prepared for, and sent out to the participants before the workshop (Larssen, Sluyter and Helmis, 1997). The report deals with the following criteria:

- selection of areas to be monitored, for representative monitoring of exposure of population, materials and ecosystems;

- classification of monitoring sites;
- selection of compounds;
- QA/QC criteria.

The emphasis of EUROAIRNET is thus to provide data suitable for assessing the exposure situation in a representative way. This is the necessary basis for assessing the actual effects of pollution, as a basis for cost-efficient abatement. The report also indicates the further development of the basis for exposure assessment, which would include the use of integrated AQ modelling and monitoring.

The discussion at the workshop provided feedback from the participating countries on the various criteria. The discussion centered around the following topics:

- The proposed station classification scheme:

The EoI system already includes a station classification scheme. ETC-AQ had proposed a classification scheme which would improve the possibility to assess the representativity of the sites relative to various exposure situations, and also to better enable a direct comparison of the air pollution situation at stations and cities in different countries, based upon reported measurements. This new scheme would require some additional station location data to be collected.

This need for a new classification scheme was not appreciated. It was seen as creating a possible confusion regarding station classes, and a considerable amount of extra effort to collect the additional data needed.

Response: ETC-AQ has adjusted its proposal such that the EUROAIRNET classification will follow the EoI classification, but for certain classes of stations, additional data will be requested from the countries for the selected stations, to improve the evaluation of representativity and the comparability of the stations.

- The proposed time limit for annual reporting to EUROAIRNET:

It was proposed that data to EUROAIRNET should be reported six months after the new year, i.e. by June. The EoI time limit is by October. six months was proposed to shorten the time span between the actual monitoring, and the production of assessments. There were conflicting comments: some to the effect that the EoI time limit should be used also for EUROAIRNET reporting, and some would like to see the reporting time limit as short as possible, even for the EoI reporting.

Today's technical platforms certainly enable data to be collected and transmitted without much delay. However, QA/QC procedures tend to slow down the reporting speed. The quality control process requires significant resources, and more so the faster the process, whether to run a more manual quality control system or to develop a more automated system of quality control. These resources may not be generally available.

Another discussion touched the question of need for new stations. The starting point for EUROAIRNET is the existing national networks and stations. Recommendations from the ETC for new stations will come, if significant gaps are found, and it will be up to each country how to react to such a recommendation.

Selection of stations for EUROAIRNET

(S. Larssen, ETC-AQ)

The selection criteria will provide guidance for actual selection of stations. The criteria for selection of cities and other areas to be included were discussed in this presentation. For instance, all cities with population above 250,000 should be included, and in these cities, all existing monitoring stations should be part of EUROAIRNET, to the extent they fulfil the other criteria. Thus, the basis for exposure assessment will be as good as possible.

At the time of the workshop, several countries had worked out a first proposal for EUROAIRNET stations: Austria, Italy, Luxembourg, the Netherlands, Norway, Portugal, Slovakia, Sweden, the UK. During and shortly after the workshop, more countries presented such proposals to the ETC: Czech republic, Hungary, Finland, Estonia, Romania. Visits to many countries were carried out during the year to prepare for station selection, and in June, Station Information Tables had been sent out to NRCs, to simplify the reporting of essential information for the proposed stations.

The stations selected by these countries can be summed up as follows:

- Number of countries: 17
 - Number of cities: 144
 - Number of stations: 456
- of which there are:
- urban background stations: 260
 - traffic stations: 151
 - industrial stations: 27
 - near city stations: 18

The compounds SO₂, NO/NO_x and CO are monitored at many of the stations. O₃ and SPM are less well represented, while PM₁₀, VOC, benzene and Pb are monitored at only some of the stations.

Most of the stations are urban (background) stations and traffic exposed urban stations, only few industrial exposed stations. The philosophy of station selection varies between countries: Italy's 81 stations are mostly traffic sites, while most other countries, such as Austria and the UK have a predominance of urban sites. This difference would introduce a biased network in terms of how well it will represent the population exposure in different countries, and needs to be considered by the ETC-AQ in cooperation with national experts before the initial configuration of EUROAIRNET is established.

Examples of selection of EUROAIRNET stations

- *UK stations (K. Stevenson, AEA Netcen) (Annex 4)*

The UK networks were described. These consist of 3 automatic networks (116 sites), a diffusion tube network (1100 NO₂ sites), and 5 networks of active samplers (312 sites). The UK automatic data are available on Internet, the automatic data are on-line, and the diffusion tube and sampler data are updated regularly.

For EUROAIRNET, the UK has, at present, selected a total of 100 stations (53 urban, 17 traffic, 3 industrial and 23 rural background), with a centralised and documented QA.

UK comments on the site selection process:

- person-days were needed to select, classify and fill out tables.
- spreadsheets should have been provided instead of WORD tables.
- classification should be done by person who has visited all stations.
- classification will to some extent be subjective.

- *Contribution from the Dutch NRC (E. Buijsman, RIVM)*

This presentation concentrated on the relationship between monitoring objectives and station classification/selection. Monitoring objectives may differ for various classes of stations, and include e.g.:

- monitoring to assess the air quality per se, at the site, or representative for an area around the site;
- monitoring for model support.

In any case, Mr. Buijsman considered that there is a need for better quantification of the station classification criteria, if a classification of stations is indeed necessary.

The classification of stations is a difficult and subjective process. Could ETC-AQ make the classification, so that it will be consistent across the network?

- *Polish stations (Mrs. L. D-Cialkowska, State Insp. For Env. Protection)*

Poland has selected 9 cities (with total population about 9 mill.) for EUROAIRNET. There are manual and automatic stations/monitors, and OPSIS monitors are included.

The answer to the question whether OPSIS monitors can be included, depends on the status of the OPSIS instrument (as for any instrument) in terms of being a reference/equivalent method, and on the QA/QC procedures used.

Poland is developing reference laboratories, and works towards developing a national QA/QC system. At present, its networks/stations may satisfy the second level QA/QC requirements (see the Criteria report).

The network in Krakow has been developed by the USEPA, with the corresponding QA/QC procedures.

4.3 AIRBASE

Current status

(Rob Sluyter, ETC-AQ)

In accordance with the new EoI Decision (97/101/EEC), the European Commission and EEA have reached agreement that EEA/ETC-AQ will be responsible for maintenance and further development of the EoI information system (AIRBASE) as well as the yearly update of the system.

1995 data gathered in the framework of the EoI was transferred to AIRBASE. 12 countries transmitted air quality data, and 8 countries meta information on their networks and stations. Data can be accessed through the pilot AIRBASE Web application (<http://www.etcaq.rivm.nl>). Only time series were transferred to AIRBASE. Aggregation and statistic calculations were done within AIRBASE using new software tools. It was required that the AIRBASE computations should be identical to the original APIS algorithm. This could not be achieved completely (since no full documentation of the original APIS algorithms were available), though the results are very close.

The ETC-AQ maintained a helpdesk for data suppliers and AIRBASE (Web) users. Contact to the help desk can be made by e-mail (airbase@rivm.nl), fax and telephone (use ETC-AQ/RIVM address and telephone/fax numbers). This help desk was used approximately one hundred times, mainly by data suppliers requesting help with uploads of data and the use of AIRBADM.

In 1997, two pilot projects have been performed to evaluate the Java programming language as a tool to build AIRBASE data selection and visualisation extensions. One focused on measurement results, the other on meta information selection and visualisation. Experience gained and JAVA applets developed will be used while further developing AIRBASE.

AIRBASE extensions foreseen

(Rob Sluyter, ETC-AQ)

AIRBASE will be used as the EUROAIRNET information system. In addition, data collected in the framework of the Dobris+3 programme and data submitted under the EU Ozone Directive will be stored in AIRBASE this year for the first time. ETC-AQ is reviewing the statistics and aggregation modules.

The budget needed to extend the functionalities of AIRBASE exceeds the funds EEA can make available from its current budget. Subsequently ETC-AQ was requested to seek additional funds. Three routes are being followed:

- ETC-AQ participated in a tender ('IRENIE', DGXIII Telematics for the Environment Applications Programme), which has been funded, and the project started;
- Seek support through the IDA (DGIII) programme as follow-up of a feasibility study on automatic data transfer of ozone data between countries and the Commission;
- Seek support through the IDA (DGIII) EEA programme as pilot EIONET application.

It is important to extend the features of the current AIRBASE Web-application to improve feedback and accessibility for users. In the workshop, a number of Web extensions foreseen were presented, among others:

- User defined statistics
- Selections from clickable maps
- Indicator reports (frequently asked questions)
- Mail results functionality
- Spreadsheet output files
- Simple map generator
- Previous APIS features with new functionalities.

Data from the PHARE countries will also be included in the AIRBASE set-up.

Extensions to be realised in the coming year will depend on budgets available.

During the discussion that followed the presentation questions were raised on the statistics that will be calculated by the ETC. These could be different from algorithms used in the countries. ETC-AQ will calculate statistics on the basis of requirements set in the EoI and seek compliance with EMEP/EBAS to ensure European compatibility of data. Quality assurance/quality control will remain the responsibility of data suppliers. Minimum requirements will be set by ETC-AQ (see section on QA/QC below).

France indicated having serious problems with public accessibility of their data through the Web. DGXI replied that according to the revised EU EoI Decision all data transmitted will be made available to the public.

Data Exchange Module

(Rob Sluyter, ETC-AQ)

ETC-AQ proposed to develop a Data Exchange Module (DEM) as part of the DGXIII funded IRENIE project, which data suppliers can use for the transmission of both meta information as well as air quality data. It is thought that the DEM will greatly improve the quality of AIRBASE, increase reporting speed and will serve the needs of data suppliers in the framework of the EoI, EUROAIRNET and the Ozone Directive. The proposed functionality was presented (see also the workshop position paper on AIRBASE in Part 2 of this report).

Belgium questioned the security of data transfer using the DEM. Data suppliers will receive a DEM filled with only their data through the password controlled EIONET.

Many delegates expressed the need for a DEM training workshop. ETC-AQ will organise a training workshop in 1998.

DEM will be able to import flat simple ASCII files containing only a station identifier to link to the meta information contained in DEM. Some countries indicated that they preferred to use other standards for data exchange. ETC-AQ will assure that DEM will also be able to import NASA-Ames 1010 and 1001, ISO-7168 and 'EoI' formatted files.

All time averages will be accepted (hourly, daily, weekly, etc. data).

There were some questions regarding the retrieval and storage of meteorological data. The need for this, as part of EUROAIRNET, has been proposed. The need is there, and it will be more pronounced in the future, as the use of models will increase. So far, there is no module in AIRBASE/DEM for meteorological data.

There was also a question of automatic error checking as part of the DEM. The ETC will stress that data quality is the responsibility of the data providers, and the QA/QC requirements will be a guide for establishing quality procedures, in case they are not already in place. The ETC will not change transferred data, unless confirmed by the data provider.

In the future, it is possible to consider the need for such quality checking modules in the DEM.

AIRBADM demonstration

(C. Potma, ETC-AQ)

Use of AIRBADM to collect air-quality monitoring networks meta information was presented. First existing meta data problems in AIRBASE were shown, using several examples:

- Stations with different names but identical numbers
- Stations with different numbers but identical names, etc.

A lot of these problems stem from the old APIS and GIRAFE databases.

AIRBADM is a rather primitive PC program, written in 1996, to collect meta data on networks, stations and measurement configurations. It is menu-driven and has pre-defined pick lists for a number of network and station classifications. Although it is cumbersome to use, a number of European countries have submitted meta data through AIRBADM in 1996 and early 1997. Experience with AIRBADM has shown that it indeed avoids most of the meta data errors made in previous exchanges. The AIRBADM follow-up is the much-discussed Data Exchange Module (DEM), which will be made available to data suppliers in July 1998 for use in the supply of 1997 data. The DEM is a more user-friendly application, also allowing for the controlled exchange of raw data.

Data transfer. Status, recommendations

(C. Potma)

In the 1995 EoI, 12 countries submitted data to the ETC/AQ, using nine different formats, creating the need for several different data conversion programs. In several cases, it was not entirely clear for which station and/or measurement configuration a particular raw data set was submitted. These cases could only be solved through direct contact with the data supplier. Most of these problems will disappear once the DEM is in use in 1998 onwards.

All countries were urged to start work on the 1996 EoI. The recommendation was to use AIRBADM for the current, 1996, EoI, and not to change anything in data formats used. Countries submitting data for the first time were requested to use ISO-7168 or NASA-AMES 1010 as format for raw data.

For the 1997 EoI process, it is planned that the DEM will be available and used.

From comments from several countries, it was apparent that it is not clear to all countries what will need to be updated, e.g. meta data, when data transfer goes from AIRBADM to DEM. It was made clear by the ETC that countries will not be expected to re-enter data. The data already transferred will be put into each country's DEM file by the ETC. When continuing data transfer using the DEM, the country should then examine the data there, and modify/complete as necessary.

Data quality requirements for EUROAIRNET stations

(C. Helmis, ETC-AQ)

The quality of the data to be delivered from EUROAIRNET stations is ultimately the responsibility of the data providers. Under this topic, the proposed minimum data quality requirements, as it was presented in the EUROAIRNET design criteria report distributed before the workshop, was presented and discussed.

A summary of the proposal is as follows:

1. Key features of a network/station's QA/QC procedures are:

- Site selection
- Instrument performance
- Calibration procedures
- Operating procedures
- Data QC system.

These features were presented according to the design criteria report, chapter 4.5.

Important items are:

- the definition and requirements to precision, accuracy, etc.;
- the calibration methods, frequency, etc.;
- training of personnel;
- data validation.

To ensure acceptable data quality, the following activities are recommended:

- Design a QA plan;
- Appoint QA manager;
- Assess and document measurement precision and accuracy within the network;
- Carry out intercalibrations/round robin calibrations;
- Perform audits and training course.

The requirements of the EoI Decision on reporting, documentation and data validation were summarised. It is apparent that the requirements of EoI are not detailed and complete enough to be a basis for the minimum QA/QC requirements for EUROAIRNET.

The basic proposal of the ETC-AQ for minimum QA/QC requirements was to define 4 levels of QA/QC procedures, in accordance with the discussion in the first workshop in Copenhagen in April 1997:

- 1st level: No documented QA/QC procedures;
- 2nd level: Local QA/QC procedures;
- 3rd level: National QA/QC procedures;
- 4th level: QA/QC by accredited institution.

The requirements for these levels are to be developed in detail. Only networks/stations qualifying for third or fourth level was to be accepted for EUROAIRNET. Stations at second level could be accepted, if the QA/QC procedures are documented and calibrations are traceable back to absolute standards.

Discussion:

The discussion, to which there were many contributions, showed that further clarification of the QA/QC issue, and the detailed requirements, is necessary.

The exchange of opinions at this workshop provided feedback which have led to major revision of the QA/QC frame, taking into account definitions and QA/QC procedures developed/being developed by ISO, JRC and also other organisations such as EMEP and WHO. The procedures and methods provided by these organisations must also be the basis for the future detailed QA/QC plan for EUROAIRNET.

It is also realised that the requirements must not be too strict in the first phase. This might remove too many data elements. On the other hand, the requirements must be developed over time to be strict enough that the database is good enough for comparisons and reliable assessments.

4.4 Progress in ETC-AQ, and development towards European-scale Assessments

EIONET clients' needs, and expectations for ETC-AQ

(J. Martin, EEA)

Mr. Martin defined the following main clients of the products from ETC-AQ: EEA, Commission, MS governments, NRCs, and the general public.

He discussed these clients' needs and some of the more important ones are:

- EEA: Networks/databases/data flow on European level, synthesis of wide range of data to key facts/indicators, EIONET/capacity building in MS, improved data comparability between countries;
- Commission: Data and analysis of policy effectiveness, support to EAPs, enforcement support;
- MS governments: country comparisons using key indicators, analysis of cost-effectiveness of monitoring, help to evaluate/design networks, assistance with capacity building;
- NRCs: clear advice concerning AIRNET/AIRBASE, assistance in its implementation, added value in return, analysis from the ETC to NRC input;

- General public: Non-technical assessments of environmental changes and their impact on their lives, indicators.

There are important messages to the ETC from this analysis of needs and expectations. Summed up they are:

- More key facts and indicators, and less technical reports: “Get the message across!”;
- Country comparisons are important for MS use, and for enforcement support;
- Easy data flow from MS to Topic centre and from ETC to users, or using EIONET;
- Use topic reports to highlight gaps in data availability, where quality needs are to be improved - key to capacity building in MS networks;
- Assist countries with capacity building;
- Analyse cost-effectiveness of monitoring and EU policies.

These messages provide guidance of the further detailed workplans of the ETC. Development of key indicators is particularly important, as is the easy flow of data to/from ETC-AQ.

ETC-AQ products and work plan

(S. Larssen)

The presentation provided a summary of 1997 and 1998 products and plans.

Products of 1997 include

- Reports: “Air Pollution in Europe 1997”
Ozone Directive Exceedance reports, for 1996, and Summer 1997
Contributions to the Dobris+3 report
Ozone Directive: a consolidation report on exceedances, control policies
Guidance report on Supplementary Assessment, connected to the new EU Directives on air pollutants
- Workshops: on EUROAIRNET/AIRBASE development (this workshop)
on Model Documentation Centre (MDC) development

ETC-AQ has led the WG on Ozone forecasting in NW Europe, and represented the EEA in the Daughter Directives working groups.

Throughout the year, the AIRNET/AIRBASE work has progressed as discussed in previous sections, and on the modelling aspect, the Model Documentation Centre (MDC) has been put on Internet, accessible to users requesting information about existing air quality models.

In 1998 work will continue on the infrastructure development (AIRNET/ AIRBASE, towards first full data exchange and reporting, and the MDC towards completing the model overview/documentation), but as important will be the ETC’s continuing contributions to EEA/EU assessments. In 1998, this will include the AUTO-OIL 2 study, and the EU 98 report.

1998 will see developments towards the pan-European scale, as the Phare Topic Link establishes itself as part of the Topic centre.

The experience gained in the Topic centre during its first 3-year period has raised the following questions or items which will be part of the discussion of necessary modifications of the direction of the work:

- Relations with EIONET: The cooperation may seem to be rather one-sided, meaning the EIONET experts are more providers of data and services (e.g. report screening and program evaluation), and less being involved in interactive work with the Topic centre partners. The Topic centre work would benefit from a more active attitude on the part of the Topic centre to interact with the EIONET expert;
- Time synchronisation: Improvement of connections to clients' needs, and the political agenda;
- Towards full assessments: The Topic centre will continue to link strongly to actual data, but, in order to make assessments which are useful bases for abatement analysis, sees the need to improve or select tools relating air quality to emissions and effects, i.e. AQ/exposure modelling tools;
- Increasing demands/limited budgets: In this situation, the Topic centre must set realistic ambitions, and focus its work. There may be a resource conflict between the data flow/presentation work and the work on assessments, which both require substantial resources. There must be efforts towards obtaining additional funds from other sources.

The PHARE Topic Link, PTL

(K. Stevenson, PTL)

The formation of the PHARE Topic Link on Air Quality was announced

The overall aim of the PHARE Topic Link on Air Quality (PTL-AQ) is to assist the EEA to extend its work on air quality to the PHARE partner countries - Albania, Bosnia-Herzegovina, Bulgaria, Czech Republic, Estonia, F.Y.R.O.M, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia. This will be achieved by working closely with the existing European Topic Centre on Air Quality (ETC-AQ) to form, in effect, a single extended topic centre to cover all 31 countries now included within the remit of the EEA. The PTL-AQ will also support the PHARE countries, where appropriate, in the accession process in relation to air quality protection.

The PTL-AQ includes air monitoring and modelling experts from AEA Technology (AEA), Czech Hydrometeorological Institute (CHMI), Slovak Hydrometeorological Institute (SHMU) and Decision and System Management Ltd (DASY) in Hungary.

Key personnel in the PTL-AQ management committee are as follows:

- | | | | |
|-------------------|------|---------------|----------------|
| • Jaroslav Fiala | CHMI | (Czech Rep.) | Project Leader |
| • Geoff Dollard | AEA | (UK) | |
| • Lubor Kozakovic | SHMU | (Slovak Rep.) | |
| • Istvan Kiss | DASY | (Hungary) | |

The workplan of the PTL-AQ will build on that of the ETC-AQ in the areas of EIONET development, air monitoring networks, air information systems, modelling infrastructure, air quality assessment and EEA reports. During the 2-year contract of the PTL-AQ, experts will visit a number of the PHARE countries to further explain and clarify the needs of the EEA, particularly in relation to AIRBASE and EUROAIRNET.

European-scale assessments of air quality and effects

(S. Larssen)

One of the ultimate goals of the work of the ETC-AQ is, in collaboration with EEA and the EIONET experts, to produce assessments of air pollution and its effects, for Europe as a whole. Such assessments must be in a form suitable to provide a basis for

- a) cost-effective abatement, and
- b) evaluation of effectiveness of abatement policies.

The question raised in this presentation was: How far have we come, and which is the way forward?

The discussion at the first workshop in Copenhagen in 1996 provided guidance on these issues:

- Assessment of air quality as carried out by the ETC-AQ:
 - to map air quality on relevant scales,
 - to provide quantitative relations between air pollution and emissions,
 - to provide quantitative information on exposure, as a basis for effects/risk evaluations.

The ETC-AQ should contribute to such assessments in collaboration with e.g. ETC-AEM, JRC, DGXI, WHO-ECEH and ECE-EMEP. Activities of ETC-AQ should include for example:

- evaluation of data from networks (AIRNET etc.), and production of maps,
- calculation of AQ/deposition from emission data,
- calculation of effects-relevant exposures, from measured or modelled data.

There is progress in the ETC's activities towards these ends:

- The AIRNET/AIRBASE activities will provide the necessary data for maps, and also a basis for evaluating results of models. The proposed criteria for EUROAIRNET support both these objectives.
- The Model Documentation System development and the production of the guidance reports on modelling (two reports, one on use of models for various applications, and one on urban-scale modelling) are activities to support the ETC's use of models in the assessment work.

Network data evaluations and production of maps are part of our work-plans, but the active use of models (in the calculation of AQ and deposition fields, of source contributions and exposure, etc.) needs to be prioritised if significant progress is to be made in the ETC's contributions to such activities.

Already, the Topic centre benefits from the modelling or regional AQ and deposition in Europe carried out within the EMEP program, to which the Topic centre has access via the DNMI member of the Topic centre. However, on the urban scale in Europe, assessments using models are not carried out extensively, and this is a necessary activity for policy support. Modelling in some selected cities takes place in the Auto-oil Programme, and the Topic centre will contribute to this work in 1998, by making top-down modelling of emission-air pollution relationships in a number of cities. However, urban air quality modelling across European cities, based upon bottom-up mapping of emissions is also necessary to develop a proper support for policies. For this, active cooperation with the ETC-AEM is necessary, as well as model evaluation, selection and utilisation.

The place of the Topic centre in this work is yet to be thoroughly discussed. There are many possible actors who can contribute to various parts of this work. The place of the Topic centre should be discussed during 1998, as a basis for forming the workplan for 1999.

5. Concluding remarks

Mr. Gordon McInnes concluded the workshop by referring to the EoI Decision data reporting requirement as the basis also for the EEA network/database. EUROAIRNET/AIRBASE will enhance EoI reporting, set criteria which will better ensure the representativity at the European level, the quality of the data produced, and include the Phare countries.

There is agreement on the basic aspects of EUROAIRNET/AIRBASE. Many of the comments and topics in the discussion at this workshop will lead to modifications in the further development of EEA products.

This workshop has reflected the significant progress in network/database development in the past years, towards a faster and more efficient flow of data. The air topic is much ahead of the similar developments in the water and other fields.

The next workshop will be held in about 12 months.

6. References

Larsen, S. (1996a) European workshop on Air Quality Monitoring and Assessment, Copenhagen 23-25 April 1966. Position paper.

Larsen, S. (1996b) Report on State of the Air Pollution Monitoring Situation in Europe - Problems and Trends. Project MA 1-2. European Environment Agency.

Larsen, S. (1997) Criteria for the design of EUROAIRNET. The EEA Air Quality Monitoring and Information Network. European Environment Agency.

Annex 1: Programme

2nd EIONET Workshop on Air Quality Monitoring and Assessment

Brussels, 22-23 September 1997

Venue: EFTA Secretariat (the EFTA Building), rue de Trèves 74, Brussels,
(phone 322 286 1712, fax 322 286 1750)

Agenda

Monday 22 September (14:00-17:30)

Registration: Desk opens at 11:00.

Opening session

Chairman: Mr. Peter Rombout, Acting Project Leader, ETC-AQ

14:00-14:10

Welcome and opening.

Mr. Gordon McInnes, EEA Program Manager, Monitoring
and Databases

14:10-14:25

Status of the Exchange of Information (EoI) process

Mr. Pierre Hecq, EC DGXI

EUROAIRNET

14:25-15:00

Introduction, goal, status.

Criteria for selection of areas and stations.

Mr. Steinar Larssen, Task Leader, ETC-AQ

15:00-15:30

Discussion of concept and criteria

15:30-16:00

Coffee break

16:00-16:15

Selection of stations. Overview.

Mr. Steinar Larssen

16:15-17:00

Selection of stations. Presentation by 2-3 countries.

17:00-17:30

Discussion

Tuesday 23 September (09:00-17:10)

AIRBASE

- Chairman: Mr. Steinar Larssen, Task Leader, ETC-AQ
- 09:00-09:20 Current status.
Mr. Rob Sluyter, Task Leader, ETC-AQ
- 09:20-09:45 AIRBADM Demonstration.
Mr. Charlos Potma, ETC-AQ
- 09:45-10:15 Discussion, Questions
- 10:15-10:40 AIRBASE Extensions foreseen.
- general introduction, statistics, Web incl. Java applets.
Mr. Rob Sluyter
- 10:40-11:20 Coffee break
Further demonstration of AIRBADM
- 11:20-11:45 Data Exchange Module (DEM)
Mr. Rob Sluyter
- 11:45-12:30 Discussion on AIRBASE items
- 12:30-14:00 Lunch
- 14:00-14:30 Data quality requirements
Mr. Constantin Helmis, ETC-AQ
- 14:30-15:00 Data transfer
- Status, Recommendations
- Discussion
Mr. Charlos Potma, ETC-AQ
- 15:00-15:30 Coffee break

ETC-AQ: Progress and development towards European-scale Assessments

- Chairman: Mr. Gordon McInnes
- 15:30-15:50 Customer's needs and expectations from the ETC-AQ.
Presentation Mr. Jock Martin, EEA
- 15:50-16:10 ETC-AQ Products and workplan.
Mr. Peter Rombout, Acting ETC-AQ Project Leader
- 16:10-16:20 Presentation of PHARE Topic Link (PTL)
Mr. Men Stevenson, AEA NETCEN
- 16:20-16:40 European-scale assessments of air quality and effects.
Mr. Steinar Larssen
- 16:40-17:10 Discussion.

Annex 2: List of participants

Country representatives:

Dritan Xhillari
Institute of Public Health
ISHP
Rruga "A. Moisiu"
AL-TIRANA
ALBANIA
Tel.: +355 42 635 53
Fax: +355 42 635 53

Johannes Mayer
Federal Environment Agency
Umweltbundesamt (A)
Spittelauer Lände 5
A-1090 VIENNA
AUSTRIA
Tel.: +43 1 31304 3240
Fax: +43 1 31304 5400
E-mail: mayer@ubavie.gv.at

Bertrand Luc
ISSEP
Rue du Chéra 200
B-4000 LIEGE
BELGIUM
Tel.: +32 4 252 7150
Fax: +32 4 252 4665
E-mail: issep2.mail.interpac.be

Edward Roekens
Flemish Environmental Agency
Kronenburgstraat 45
B-2000 ANTWERP
BELGIUM
Tel.: +32 3 244 1231
Fax: +32 3 238 9687
E-mail: e.roekens@vmm.be

Aleksandar Knezevic
Gabelina 25
71000 SARAJEVO
BOSNIA - HERZEGOVINA
Tel.: +387 71 44 42 46
Fax: +387 71 44 42 46
E-mail: CET.AKNEZ@ZAMIR-
SA.ZTN.APC.ORG

Jaroslav Fiala
Czech Hydrometeorological Institute
Na Sabatce 17
CS-146 06 PRAGUE 4
CZECH REPUBLIC
Tel.: +42 2 401 9801
Fax: +42 2 4403 2468
E-mail: fialaj@sun36.chmi.cz

Ruth Baumann
National Environment Agency (A)
Spittelauer Lände 5
A-1090 VIENNA
AUSTRIA
Tel.: +43 1 31304 5852
Fax: +43 1 31304 5400
E-mail: baumann@uba.ubavie.fr.at

Alain Derouane
Cellule Interrégionale de l'Environnement
Avenue de la Couronne 310
B-1050 BRUXELLES
BELGIUM
Tel.: +32 2 649 8191
Fax: +32 2 644 2391

Daniel Rasse
Celine-Ircel
Av. de la Couronne, 310
B-1050 BRUSSELS
BELGIUM
Tel.: +32 2 649 8191
Fax: +32 2 644 2391
E-mail: celinair@grafois.ihe.be

Jan Voet
Ircel-Celine (NFP Belgium)
Av. de la Couronne, 310
B-1050 BRUSSELS
BELGIUM
Tel.: +32 2 644 0921
Fax: +32 2 644 2391
E-mail: voet@grafair.ihe.be

Valeri Serafimov
National Centre for Environment and Sustainable
Development
136 Tsar Boris III Boulevard,
P.O.Box 251
BG-1618 SOFIA
BULGARIA
Tel.: +359 2 955 98 11
Fax: +359 2 955 9015

Kåre Kemp
National Environmental Research Institute
P.O. Box 358
DK-4000 ROSKILDE
DENMARK
Tel.: +45 46 30 1842
Fax: +45 46 30 1214
E-mail: Kaare.Kemp@dmu.dk

Margus Kõrt
Estonian Environmental Research Centre
Marja 40
EE-0006 TALLIN
ESTONIA
Tel.: +372 2 494 361
Fax: +372 6 564 129
E-mail: margus@klab.envir.ee

Timo Salmi
Finnish Meteorological Institute
Sahaajankatu 20E
FIN-00810 HELSINKI
FINLAND
Tel.: +358 9 1929 5455
Fax: +358 9 1929 5403
E-mail: timo.salmi@fmi.fi

Mihail Dimovski
Ministry of Environment, Urban Planning
Construction
14 Dame Gruev St.
91000 SKOPJE
F.Y.R.O.M.
Tel.: +389 91 112 470
Fax: +389 91 112 470/
+389 91 117 163

Wolfgang Vitze
Hessische Landesanstalt für Umwelt
Rheingastr. 186
D-86203 WIESBADEN
GERMANY
Tel.: +49 611 581 237
Fax: +49 611 581 317

Eva Draskovits
Ministry of Environment and Regional Policy
Fotutca 44-50
H-1011 BUDAPEST
HUNGARY
Tel.: +36 1 457 3300
Fax: +36 1 201 4419

Roberto Abbondanza
Ministero dell'Ambiente
Via della Ferratella in Laterano, 33
I-00184 ROMA
ITALY
Tel.: +39 6 7036 2339
Fax: +39 6 7725 7005

Tarja Lahtinen
Ministry of Environment
P.O. Box 399
FIN-00121 HELSINKI
FINLAND
Tel.: +358 9 1991 9704
Fax: +358 9 1991 9716
E-mail: tarja.lahtinen@vyh.fi

Carrif Laurent
ADEME
Air Quality Monitoring Department
27, rue Louis Vicat
F-75737 PARIS CEDEX 15
FRANCE
Tel.: +33 1 4765 2050
Fax: +33 1 4765 2035
E-mail: sorm.air@mail3.imaginck.fr

Hans-Ulrich Pfeffer
Landesumweltamt NRW
Wallneyerstr. 6
D-45133 ESSEN
GERMANY
Tel.: +49 201 7995 264
Fax: +49 201 7995 575

Horst Werner
Umweltbundesamt (D)
P.O. Box 330022
Bismarckplatz 1
D-14193 BERLIN
GERMANY
Tel.: +49 30 8903 2822
Fax: +49 30 8903 2282

Michael McGettigan
Environmental Protection Agency
St. Martins House
Waterloo Road
IRL-DUBLIN 4
IRELAND
Tel.: +353 1 6674 474
Fax: +353-1-6605 848
E-mail: m.mcgettigan@epa.ie

Iraida Lyulko
Latvian Hydrometeorological Agency
Environmental Pollution Observation Centre
Maskavas str. 165
LV-1019 RIGA
LATVIA
Tel.: +371 7 11 2040/7 11 2058
Fax: +371 7 145 154
E-mail: LHMA@lhma.org.lv

Rita Tijunaite
Joint Research Centre of the Ministry of
Environmental Protection
Juozapaviciaus Str. 9
LT-2600 VILNIUS
LITHUANIA
Tel.: +370 2 728 278
Fax: +370 2 723 202
E-mail: aplinkos.tyrimai@nt.gamta.lt

Ed Buijsman
RIVM
P.O. Box 1
NL-3720 BA BILTHOVEN
THE NETHERLANDS
Tel.: +31 30 2742 318
Fax: +31 30 278 7531
E-mail: Ed.Buijsman@rivm.nl

Berit Kvæven
Norwegian Pollution Control Authority
P.O. Box 8100 Dep.
N-0032 OSLO
NORWAY
Tel.: +47 22 57 34 00
Fax: +47 22 67 67 06
E-mail: berit.kvaven@sftospost.
md.dep.telemax.no

Badita Petroaica
Research and Engineering Institute for
Environment
Spl. Independentei 294
RO-777 03 BUCHAREST
ROMANIA
Tel.: +40 1 637 3020
Fax: +40 1 312 1393

Rozalija Ciglar
Hydrometeorological Institute of Republic of
Slovenia
Vojkova 1B
SI-1000 LJUBLJANA
SLOVENIA
Tel.: +386 61 327 461
Fax: +386 61 133 1396
E-mail: rozalija.ciglar@rzs-hm.si

Carl-Elis Boström
Swedish Environmental Protection Agency
P.O. Box 47086
S-402 58 GOTHENBURG
SWEDEN
Tel.: +46 8 698 1256
Fax: +46 8 6981584
E-mail: ceb@environ.se

Serge Solagna
Administration de l'Environnement
1, Rue Bender
L-1229 LUXEMBOURG
LUXEMBOURG
Tel.: +352 40 5656 234
Fax: +352 48 5078
E-mail: serge.solagna@aev.etat.lu

Adriaan Minderhoud
RIVM National Institute of Public Health and the
Environment (NL)
P.O. Box 1
NL-3720 BA BILTHOVEN
THE NETHERLANDS
Tel.: +31 30 274 2035
Fax: +31 30 274 4405
E-mail: ad.minderhoud@rivm.nl

Lucyna Dygas-Cialkowska
State Inspectorate for Environmental Protection
Wawelska 52/54
PL-00 922 WARSAW
POLAND
Tel.: +48 22 256 976
Fax: +48 22 254 129
E-mail: gios@warman.com.pl

Lubor Kozakovic
Slovak Hydrometeorological Institute
Jeseniova 17
SL-833 15 BRATISLAVA
SLOVAK REPUBLIC
Tel.: +42 7 3785 496
Fax: +42 7 375 670
E-mail: lubo @shmuvax.shmu.sk

Angeles Cristobal
Ministry of Environment
Pza. de San Juan de la Cruz s/n.
E-28071 MADRID
SPAIN
Tel.: +34 1 597 6570
Fax: +34 1 597 5857
E-mail: angeles.cristobal@sgca.mma.es

Karin Sjöberg
IVL (Swedish Environmental Research Inst.)
P.O. Box 47086
S-402 58 GOTHENBURG
SWEDEN
Tel.: +46 31 46 00 80
Fax: +46 31 48 21 80
E-mail: Karin.Sjoberg@ivl.se

Trudie McMullen
Department of Environment,
Air Quality Division
B3 55 Romney House, 43 Marsham Street
LONDON SW1P 3P4
U.K.
Tel.: +44 171 276 8420
Fax: +44 171 276 8299

Ken Stevenson
AEA Technology
Culham Abingdon
Oxfordshire, OX14 3DB
U.K.
Tel.: +44 1235 463179
Fax: +44 1235 463011
E-mail: ken.stevenson@aeat.co.uk

EC-DGXI:

Pierre Hecq
EC-DGXI
Rue de la Loi 200
B-1049 BRUSSELS
BELGIUM
Tel.: +32 2 296 8704/8706
Fax: +32 2 296 9554
E-mail: p.hecq@mhsq.cec.rtt.be

JRC-Ispra:

Diana Rembges
Joint Research Centre
Environment Institute ERLAP
T.P. 510
I-21020 ISPRRA (Va)
ITALY
Tel.: +39 332 78 5953
Fax: +39 332 78 5236
E-mail: diana.rembges@jrc.it

ETC-AE:

Dietmar Koch
Federal Environment Agency
Umweltbundesamt
P.O. Box 330022
D-14191 BERLIN
GERMANY
Tel.: +49 30 8903 2392
Fax: +49 30 8903 2178
E-mail: dietmar.koch@uba.de

EEA:

Gordon McInnes
European Environment Agency
Kongens Nytorv 6
DK-1050 COPENHAGEN K
DENMARK
Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99
E-mail: gordon.mcinnnes@eea.eu.int

Jock Martin
European Environment Agency
Kongens Nytorv 6
DK-1050 COPENHAGEN K
DENMARK
Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99
E-mail: jock.martin@eea.eu.int

D.N. Asimakopoulou
University of Athens
Department of Applied Physics
Ippokratous Str. 33
GR-10680 ATHENS
GREECE
Tel.: +30 1 3636 279/3610 006
Fax: +30 1 3605 080
E-mail: Demos@atlas.uoa.gr

ETC-AQ:

RIVM:

Roel van Aalst
RIVM
P.O. Box 1
NL-3720 BA BILTHOVEN
THE NETHERLANDS
Tel.: +31 30 274 2025
Fax: +31 30 228 7531
E-mail: roel.van.aalst@rivm.nl

Charlos Potma
RIVM
P.O. Box 1
NL-3720 BA BILTHOVEN
THE NETHERLANDS
Tel.: +31 30 274 2884
Fax: +31 30 228 7531
E-mail: charlos@rivm.nl

RIVM (cont.)

Peter Rombout
RIVM
P.O. Box 1
NL-3720 BA BILTHOVEN
THE NETHERLANDS
Tel.: +31 30 274 2884
Fax: +31 30 228 7531
E-mail: roel.van.aalst@rivm.nl

Rob Sluyter
RIVM
P.O. Box 1
NL-3720 BA BILTHOVEN
THE NETHERLANDS
Tel.: +31 30 274 2884
Fax: +31 30 228 7531
E-mail: rob.sluyter@rivm.nl

NILU:

Steinar Larssen
Norwegian Institute for Air Research
P.O. Box 100
N-2007 KJELLER
NORWAY
Tel.: +47 63 89 80 70
Fax: +47 63 89 80 50
E-mail: steinar.larssen@nilu.no

Terje Krognnes
Norwegian Institute for Air Research
P.O. Box 100
N-2007 KJELLER
NORWAY
Tel.: +47 63 82 03
Fax: +47 63 89 80 50
E-mail: terje.krognnes@nilu.no

University of Athens:

Constantin Helmis
University of Athens
Dept. of Applied Physics
Laboratory of Meteorology
Ippokratous Street 22
GR-10680 ATHENS
GREECE
Tel.: +30 1 7284 927/850
Fax: +30 1 7295 281
E-mail: chelmis@atlas.uoa.gr

National Observatory of Athens:

Mike Petrakis
National Observatory of Athens/IMPAE
P.O. Box 20.048
GR-11810 ATHENS
GREECE
Tel.: +30 1 3456257
Fax: +30 1 3421019
E-mail: mike@env.meteo.noa.gr

Annex 3: Selected sheets from presentation: EUROAIRNET -Criteria for selection of areas and stations by S. Larssen

Criteria for design of EUROAIRNET

Important criteria:

- ◆ Selection of areas to be monitored
- ◆ Classification of monitoring sites
- ◆ Selection of compounds
- ◆ QA/QC

Representative monitoring of exposure of:

- ◆ population
- ◆ materials
- ◆ ecosystems

Representative monitoring for estimation of exposure:

Area selection criteria must relate to:

- ◆ the spatial distribution of "targets"
- ◆ the span of exposure situations, from high to low exposure

"targets": population, materials, ecosystems

Representative monitoring of material exposure

- ◆ Concentrate on urban areas
- ◆ Monuments/historical buildings also in towns/industrial/rural areas

"The building techniques and materials used may differ between states and for bigger states even inside the country. The selection of stations must take this variation in customs and techniques into account, to have representative stations for the different areas."

Representative monitoring of exposure of:

- ◆ population
- ◆ materials
- ◆ ecosystems

Representative monitoring of ecosystems exposure

- ◆ Forests
- ◆ Crops
- ◆ Fresh waters

Selection of areas to be monitored must relate to:

- ◆ the large variation in types of ecosystems and the natural factors influencing them
- ◆ the spatial large variation in air quality and deposition

Annex 4: Selected sheets from presentation: Examples of EUROAIRNET selection: UK stations by K. Stevenson

EUROAIRNET UK AUTOMATIC SITES (hourly data)

Sites:

TRA	17
IND	3
URB	57
NCB	7
REG	13
REM	3
Total	100

Pollutants:

NO₂ 79 CO 57 SO₂ 61

O₃ 69 PM₁₀ 46

Benzene/1,3 Butadiene 13

Other Data Available from UK

	Sites	Resolution	Timescale
Lead	28	weekly	12m
Smoke/SO ₂	222	daily	9m
Urban NO ₂	1200	monthly	12m
Acid	5	daily (EMEP)	6m
Deposition	32	monthly	12m
Rural NO ₂	32	monthly	12m
Rural SO ₂	9	daily	12m
	29	weekly	12m
PAH, PCD Dioxins	4	quarterly	12m

EUROAIRNET UK AUTOMATIC POLLUTANTS

	Urban	Rural	Total
NO ₂	70	9	79
CO	57	0	57
SO ₂	52	9	61
O ₃	50	19	69
Benz	12	1	13
1,3-Bd	12	1	13
PM ₁₀	43	3	46

Quality Assurance and Control

All UK National Networks are subject to quality assurance that is:

- centralised
- consistent and harmonised
- documented
- high quality

Quality code 3

UK Comments on Site Classification Process

- 100 sites - 3 mandays
- needs someone who has visited all sites
- assessments are subjective
- default values for representativity
- spreadsheet not table

Annex 5: Sheets from presentation: EIONET customer needs and expectations to ETC-AQ by J. Martin

EIONET CUSTOMER NEEDS & EXPECTATIONS FOR ETC/AQ

WHO ARE THE CUSTOMERS

- " EUROPEAN ENVIRONMENT AGENCY
- " COMMISSION SERVICES
- " MEMBER STATE GOVERNMENTS
- " NATIONAL REFERENCE CENTRES
- " GENERAL PUBLIC

EEA'S NEEDS

- " Networks/databases at Euro level
- " Organised data flow
- " Base data for integrated assessment
- " Projections
- " Key facts and indicators
- " Capacity building in MS to plug gaps
- " Improved comparability

COMMISSION'S NEEDS

- " Analysis of EU policy effectiveness
- " Support to 5th EAP and beyond
- " Key messages/indicators
- " Level playing field on enforcement
- " Build capacities in MS to support enforcement
- " Paper not Internet

MS GOVERNMENTS

- " Key facts/indicators
- " Country comparisons
- " Cost effectiveness of EU policies
- " Level playing field on enforcement
- " Cost-effectiveness of current monitoring
- " Help to build/redesign networks
- " Paper not Internet

NATIONAL REF. CENTRES

- " Something in return for their input
- " Clear steer on AIRNET/AIRBASE
- " Help with implementation of above
- " Advice on best practice for monitoring, QA procedures etc
- " Indicators/key facts
- " Scientific assessments?

GENERAL PUBLIC

- " Key facts/Indicators
- " Non-technical assessments of how environmental changes impact on their lifestyle and well-being
- " Paper not Internet

WHAT DOES ALL THIS MEAN?

- " Less technical/compendium reports, more key facts/indicators
- " Country comparisons for MS use and to support enforcement
- " Data flows across telematics EIONET
- " Help with capacity building in countries
- " Analysis of cost-effectiveness of monitoring and EU policies

Part 2

AIRBASE Report:

**1997 development status and
extensions foreseen**

Prepared by
Rob Sluyter, Charlos Potma, Terje Krognnes,
Mike Petrakis and Patrick van Hooydonk

Please note that this part of the report is available in electronic format only on:
<http://www.eea.eu.int/frdocu.htm>