

Topic report No 7/1999

# Air Quality

## Annual topic update 1998

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# 1. Introduction

## 1.1. The European Environment Agency

The European Environment Agency (EEA), based in Copenhagen, was established in 1990 by a Council Regulation of the European Union no. 1210/90. The main purpose of EEA is to provide objective, reliable and comparable information for those concerned with framing, implementing and further developing European environmental policy, and for the wider European public.

One of the major tasks of EEA is the co-ordination and further development of the European Environmental Information and Observation Network, EIONET, consisting of co-ordinating institutes (National Focal Points) and expertise centres (National Reference Centres) in the participating countries, and European Topic Centres (ETCs). These ETCs work on behalf of EEA with the countries and the European Commission on specific environmental areas.

In collaboration with the EU PHARE programme, the work of EEA has been extended to 13 central- and eastern European countries to cover 31 European countries.

## 1.2. The European Topic Centre on Air Quality

The European Topic Centre on Air Quality (ETC-AQ) was established by EEA at the end of 1994. The goal of ETC-AQ is to support EEA in all its tasks involving air quality.

A consortium of four institutes was contracted for the period 1995-1997:

- National Institute of Public Health and the Environment (RIVM), Bilthoven, the Netherlands (lead institute)
- Norwegian Institute for Air Research (NILU), Kjeller, Norway
- National Observatory of Athens (NOA), Athens, Greece, supported by University of Athens and Aristotle University of Thessaloniki
- Norwegian Meteorological Institute (DNMI), Oslo, Norway

In 1997, the Management Board of EEA decided to extend the contract for a further period 1998-2000.

The ETC Leader, Roel van Aalst (RIVM), is supported by a Steering Group consisting of the lead contact persons from each of the participating institutes.

In the framework of the EEA-PHARE collaborative project, a consortium was contracted by EC-DGIA in September 1997, for a period of two years, to form the PHARE Topic Link on Air Quality (PTL-AQ). The consortium

consists of:

- AEA Technology (AEAT), UK
- Czech Hydrometeorological Institute (CHMI), CZ
- Slovak Hydrometeorological Institute (SHMI), SK
- Decision and Systems Management Ltd. (DASY), HU

The PTL-AQ leader is Jaroslav Fiala (CHMI). A PTL Steering Group consisting of contact persons from the participating institutes supports him.

The main objective of the PTL-AQ is to help extend the EEA work on air quality to the 13 PHARE countries. To this end, it co-operates closely with the ETC-AQ under co-ordination of the ETC leader to ensure that the two centres in fact act as one joint extended Topic Centre on Air Quality. From the EEA, the work is directed by the EEA Project Manager on Air Quality, Gabriel Kielland, while PHARE aspects are co-ordinated by the EEA PHARE Expert, Stoyan Blagoev. In spite of the organisational and financial complexities involved, the collaboration within the extended ETC has been very constructive and productive.

The work of ETC-AQ is derived from the EEA Multiannual Work Programme, and, more specifically in the context of this report, upon the EEA Annual Work Programme 1998. The work is further specified in the technical annexes to the contracts between EEA and ETC-AQ, and between EC-DG1 and PTL-AQ. The associated work plans define in more detail the tasks, products and time schedules.

The work on each of the tasks, as defined in the work plans, is carried out by joint task teams composed of team members from the ETC and PTL institutes, and led by one task leader who is responsible for the task and its deliverables.

In the ETC Management Committee, which consists of the Steering Group and the task leaders and meets twice per year, the planning and progress of work and plans for future work are discussed and endorsed.

Information on the work programme, progress and products of the ETC-AQ in 1995, 1996 and 1997 can be found in the Annual Summary Reports 1995 and 1996 (EEA Topic Reports 22/1996 and 5/1997), and the Annual Topic Update 1997 (EEA Topic Report 3/1998). The current report presents a summary of the results of the work in 1998.

<p>For further information, visit the website of ETC-AQ: <a href="http://www.etcaq.rivm.nl/">http://www.etcaq.rivm.nl/</a></p>
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### 1.3. Primary Contact Points on Air Quality

The list of officially appointed national Primary Contact Points (National Focal Point or National Reference Centre) for EEA member countries and the list of PHARE countries National Focal Points is presented in Annex 1.

## 2. Progress in 1998

### 2.1. General

Throughout the year, various contacts were maintained with international organisations and a range of institutions.

Inside EEA, contacts were numerous; particularly, collaboration with the European Topic Centre on Air Emission (ETC-AE) has been important, mainly on the EU98 report and in the support provided to the European Commission in the Auto-Oil II Programme.

Contacts were frequent and intensive with the Air Quality and Urban Environment unit (DGXI.D3), and the Joint Research Centre's European Reference Laboratory of Air Pollution (JRC-ERLAP).

In collaboration with ETC Inland Waters and other partners, and supported by the ETC Catalogue of Data Sources, the IRENIE project under the DGXIII Telematics Applications Programme was carried out.

Connections to the Convention on Long-Range Transboundary Air Pollution, particularly the EMEP programme, are traditionally strong: two ETC partner institutes also act as Co-ordinating Centres of EMEP, and the ETC Leader is a member of the EMEP Bureau. Efforts were taken to ensure compatibility enabling exchange of data between the air quality information system AIRBASE run by ETC-AQ and the EMEP database EBAS.

Collaboration with WHO was mainly through the WHO European Centre for Environment and Health in Bilthoven.

Contacts with research communities included the European Commission (DGXII) and EUROTRAC.

### 2.2. Air quality aspects of EIONET

The National Focal Points (NFPs) and National Reference Centres (NRCs) for air quality have been involved in the work of ETC-AQ in a number of ways.

First, NFPs were involved in discussions on the work plan. Work plans and developments were presented or otherwise made available at NFP/EIONET meetings in Copenhagen.

The ETC organised the Third European Workshop on Air Quality Monitoring and Assessment in Copenhagen in October. The workshop was attended by representatives from 14 EEA member countries, 13 PHARE countries, and Switzerland, Croatia, Ukraine and Belarus. Present were also

representatives from EEA and ETC-AE, from DGXI, JRC-Ispra and WHO. See Box 2.1 for more information on the workshop.

Three draft reports prepared by ETC-AQ in 1997/1998 were submitted for comment to the participants, and useful comments were received and used for improvements.

NFPs and/or NRCs delivered upon request national air quality data. Most of these were provided under the EU Exchange of Information Decision (EoI) and the Ozone Directive; the procedures for non-EU members were synchronised with the EoI, and the same formats and procedures were used. Two newsletters on activities in ETC-AQ were produced and mailed in 1998 to some 1000 addresses across Europe.

A programme for visiting countries has been continued. In these visits, often combined with national meetings of regional institutions for air quality monitoring and assessment, emphasis is on monitoring networks, particularly in relation to EUROAIRNET, quality assurance, and information systems. The national infrastructure was discussed, and prospects for intensified collaboration were explored. These visits were considered very useful, both by the ETC and the national experts, for developing common views and mutual understanding. The PTL partners have initiated country visits in PHARE countries. Countries visited in 1998 include Italy, Spain, Austria, Bulgaria, and Romania.

The ETC website on the Internet was thoroughly revised in December 1998. The site now features news and events, information on EEA and the ETC and PTL, newsletters, databases (AIRBASE, the Data Exchange Module, the Model Documentation System) and reports and publications. The website is linked to a similar PTL-AQ website.

### 2.3. Ad-hoc technical support to EEA

The ETC:

- gave a presentation on combined use of monitoring and modelling for European ozone assessment at the Conference "Bridging the Gap", London, June 1998;
- participated in two meetings of the Environmental Assessment Group (EAG) of EUROTRAC-2, the EUREKA project studying transport and transformation of air pollution over Europe. The EAG, in which DGXI, DGXII, EMEP, EEA and other air quality scientists co-operate, forms an interface between the scientific research in some 260 European research groups, and the information needs of environmental policy in Europe, as provided by these operational agencies;
- participated in the UNECE Task Force on Integrated Assessment Modelling;
- presented a paper to the WHO workshop on Particulate Matter, Berlin, September 1998.



## Box 2.1. 3rd EIONET Workshop on Air Quality Management and Assessment

The workshop was held at EEA in Copenhagen on 12-13 October 1998. It was attended by 63 participants from 31 European countries, DGXI, JRC Ispra, EMEP, WHO and EEA.

Topics discussed in several sessions were:

Status of EUROAIRNET and the Exchange of Information process, and the QA/QC topic  
Status and development of the information system AIRBASE, software for data collection and information access

Urban Air Quality Management

Europe wide assessments

Programmes and strategies of EEA/ETC-AQ/DGXI

Key recommendations

The main conclusions and recommendations of the workshop were:

Collection of quality assured data air quality is a key activity for obtaining comparable European information and for providing European assessments, as basic information for framing and implementing environmental policies, aiming at improving air quality in Europe. In this context, EC air quality legislation is an essential framework;

The process of building EUROAIRNET is well underway. Main areas for further progress are: - Contributions from countries that have not responded so far (7 EEA, 6 PHARE countries),

- Completion of large cities monitoring sites selection,

- Information on station representativeness and measurement uncertainty,

- Shortening the data reporting delay to 6 months is achievable for most EEA and PHARE countries;

The Data Exchange Module proves to be a useful tool in data transmission under the EoI, Ozone Directive, and for EUROAIRNET. It provides a major step forward in data exchange;

The AIRBASE web functionality is to be extended substantially in the coming months. Most important extensions, as derived from countries responses to a questionnaire, are related to presentation of data and meta-information, a results mailing facility, component specific reports and selection from clickable maps;

EEA (ETC-AQ in collaboration with the ETC Air Emissions), in the framework of the EC Working Group on Guidance on assessment under the Framework Directive, should proceed in developing practical, specific guidance on urban emission inventories, urban monitoring and data processing, and urban modelling;

An important goal for the future is streamlining and harmonising data collection from various international organisations, such as UNECE, EUROSTAT, OECD, WHO, and WMO-GAW, in order to avoid duplication and multiple data requests to the countries. It is equally important to attempt to avoid duplication in reporting;

Collaboration between the PHARE Topic Link on Air Quality and the ETC has been intense and constructive to produce an extended ETC-AQ;

The new air quality strategy proposed within DGXI would be a challenge for EEA to provide – in close collaboration with JRC, countries, and others – the necessary baseline information required by the Commission.

## 2.4. Further development of the air quality monitoring network EUROAIRNET

EUROAIRNET is the working acronym for the European Air Quality Monitoring Network that is being established under co-ordination of the ETC-AQ. It should form the basis of reporting, on an annual basis, the assessment of European air quality in the preceding year. The network is primarily built on sites selected by the EU Member States for reporting under the EoI Decision but will be extended by a selection of existing networks and stations in those countries, and in other European countries, to ensure adequate representativeness at the European level. Data quality and station representativeness are key parameters; QA/QC procedures are documented, and data quality objectives are derived from the monitoring objectives. Data from this network are transferred to the air quality database AIRBASE. The emphasis of EUROAIRNET is on urban air quality, but regional stations are included as well.

The explicit goals and criteria for EUROAIRNET have been developed and discussed at Workshops on European Air Quality Monitoring and Assessment in 1996, 1997 and, most recently, in 1998 (see Box 2.2). They are now contained in the EEA Technical Report "Criteria for EUROAIRNET" to be published in early 1999. Countries have been asked to propose stations for EUROAIRNET according to the criteria and agree upon the final selection with the ETC. Box 2.2 summarises the results of the site selection until October 1998, as laid down in the "EUROAIRNET Status Report 1998" to be published in early 1999.

Country visits have been conducted to NFPs/NRCs to get updated information on the networks and stations in each country, and to discuss the criteria, selection of stations, data availability, national reporting, etc. In 1998, ETC-AQ conducted visits to Italy, Spain, Austria, Romania and Bulgaria. Reports from these and earlier visits have been put together and will be published on the ETC-AQ website in 1999.

## Box 2.2 EUROAIRNET site selection

The starting base of EUROAIRNET is the stations reported by EU member countries under the Exchange of Information (EoI) Decision.

EUROAIRNET extends this selection to PHARE and other countries and also provides a tool for modifying and extending the EoI selection, so that EUROAIRNET can provide a fully representative picture of air pollution exposure in Europe.

*EUROAIRNET status, October 1998*

- 18 countries
- 243 cities
- 23 industrial areas
- 95 rural stations
- 865 stations
- 80 % measuring SO<sub>2</sub> and NO<sub>2</sub>
- 60% measuring NO<sub>x</sub>
- 40% measuring O<sub>3</sub>, CO and TSP
- 25 % measuring PM<sub>10</sub>
- 15 % measuring lead
- 10 % measuring benzene
- Measuring methods: to a large extent reference methods
- Validated data can be made available within six months by almost all countries

The first version of the network is expected to be finalised by July 1999.

## 2.5. Further development, implementation and update of AIRBASE

### ***AIRBASE***

Air quality information and information on monitoring networks and stations, as collected by ETC-AQ, is stored and made widely available by means of a three-layer air quality information system AIRBASE, accessible on the Internet.

In accordance with the new EU Exchange of Information (EoI) Decision, the European Commission and EEA have agreed that ETC-AQ will manage the EoI information system, report on results, and make the data widely accessible. AIRBASE is used to store and make accessible data supplied under the EoI Decision, but it also incorporates data from other sources, including data from EUROAIRNET, data submitted under the EU Ozone Directive, and data collected for EEA periodical reports.

A relational database at the ETC-AQ forms the basic layer of AIRBASE, and an Internet World Wide Web access facility was partially implemented as the top layer in 1996 (address: <http://www.etcaq.rivm.nl>). Web access facilities continue to be developed. ETC-AQ, by means of a questionnaire, invited country experts and the Commission to indicate their priorities on a list of proposed extensions of the Web page functionality, and work has started to implement these.

Station	Averaging Time	Threshold	Start Date	Hour	Duration	Maximum
Balk	1 hour	180	01-01-2000	1	2	221.00
Biddinghuizen Hoekwant	8 hours (0-8, 8-16, 16-24)	110	01-12-2000	8	2	118.00
Cabauw	24 hours	65	11-11-1999	0	1	68.00

Fig 2.1 AIRBASE DEM ozone exceedance entry form with Dutch network/station information as an example.

The PC application planned as the intermediate layer has been partially implemented. A pilot version of a PC module for information, submission of networks and station information, called AIRBADM, was made available to the countries in 1996 and was increasingly used in 1997. In 1998, the AIRBASE Data Exchange Module (DEM) was built and released, together with its Manual, to 32 European countries. This module facilitates submission of air quality data and related information to DGXI and to ETC-AQ. It features facilities for updating national monitoring network and station information, for assigning data files to stations, and for quality checks and standard formatting of data files, and subsequent submission of raw data, exceedances and statistics (Fig.2.1). DEM supports various standard formats, including the ISO-7168 format, and the NASA-AMES format used for submission of data to EMEP.

At an EoI Experts' meeting in September, experts from 14 EU Member States were trained in using the DEM. In November, a similar training was held in Prague for the PHARE countries. At the end of 1998, 11 EU Member States, Norway and Switzerland, as well as most of the PHARE countries have provided information or are preparing to do so using the DEM.

The 1998 status of AIRBASE and developments foreseen were presented to national experts for discussion at the third European workshop on air quality management and assessment.

### ***HELPDESK***

The ETC operated a helpdesk, which was frequently used, and provided information on problems and solutions in using the DEM on the ETC-AQ website.

### ***IRENIE***

A consortium of ETC-AQ, ETC on Inland Water (ETC-IW), the University of Thessaloniki and NILU/Norgit, supported by the ETC Catalogue of Data Sources is co-operating in the project IRENIE (Improved Reporting of Environmental Information using the EIONET) co-financed by EEA and the DGXIII Telematics Applications Programme. Under this project, ETC-AQ developed DEM and started to implement extensions to the AIRBASE top layer. ETC-IW will similarly develop within this project an information system WATERBASE and DEM for water data. The technical solutions are tested and implemented at the national level in EIONET, and in local systems by the project partners in Fredrikstad (Norway), Athens (Greece), and the river Thames catchment area (UK).

### ***Update of AIRBASE***

The update of the system with 1996 data was finalised in 1998. Software routines for data aggregation and statistics from the transmitted raw air quality data in accordance with the new EoI Decision were implemented. The update with 1997 data was in progress by late 1998.

## **2.6. Further development of air pollution modelling infrastructure and applications**

In 1996/1997, ETC-AQ developed in collaboration with the Ad-hoc initiative on harmonisation of modelling for regulatory purposes, a Model Documentation System on air pollution models (MDS), accessible through the Internet (see Box 2.3). This system has been expanded and updated, on the basis of recommendations from evaluation workshops in Cambridge in 1997 and in Rhodes in 1998, and responses to a questionnaire sent to modellers throughout Europe. Version 2.0 of the MDS was released on the Internet in April. A second update extending the documentation to a total of 83 models was carried out in November. The PTL-AQ has brought the MDS to the attention of experts in the PHARE countries; draft reports were completed on modelling in those countries for inclusion in MDS.

At the International Conference on harmonisation of regulatory modelling, May 1998 in Rhodes (Greece), papers were presented by the ETC and PTL partners. A workshop on the MDS was organised and held at the Conference (See Box 2.4 for more information).

A draft guidance report "Selection of models and input data for groups of applications", was submitted to EEA early 1998, but not published. Some of the content will be considered within the guidance document to the

Framework Directive to be produced in 1999. A guidance report on urban modelling "Model applications in the assessment of urban air quality" that had been produced in 1997 was circulated for comment to participants of the third EIONET Workshop on air quality assessment and management and will be printed as an EEA Technical Report in early 1999.

The ETC drafted a report "Criteria for the selection of atmospheric dispersion models in ETC-AQ applications". This report discusses selection criteria for models, depending on application, and illustrates this with examples of model applications by the ETC-AQ in its EU98 and Auto-Oil 2 work. Publication is expected in 1999.

### Box 2.3 Model Documentation System

The Model Documentation System (MDS) of the European Topic Centre on Air Quality can be accessed at

<http://aix.meng.auth.gr/lhtee/database.html>

The Model Database contains descriptions of 83 atmospheric dispersion models (status of December 1998).

The catalogue can be searched in two predefined modes:

#### ***Structured search***

which is typically applied when a user has a certain application in mind, and would like to pinpoint candidate models that fit his purpose.

#### ***Unstructured search***

which can be a useful option when a user wants to identify models whose description contains certain, specialised terms.

As a third alternative the whole catalogue can be browsed.

### Box 2.4 ETC-AQ participation at the 5th International Conference on Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes, Rhodes, Greece, 18-21 May 1998

Version 2.0 of ETC-AQ's Model Documentation System (MDS) was presented by Nicolas Moussiopoulos as an invited contribution to the opening session of the Conference. Another oral presentation by Dusan Zavodski dealt with modelling activities in PHARE countries. (See references below).

In an attempt to discuss in-depth the experience with the MDS, but also to seek opinions on the system's future development, ETC-AQ organised in Rhodes a small workshop which was attended by about 40 conference delegates. As the main conclusion there was unanimous agreement on the usefulness and easy accessibility of the MDS. Several recommendations were made for the system's future development, including:

- the creation of a documentation system for meteorological pre-processors to dispersion models possibly within the COST 715 action;
- the inclusion of Web hyperlinks to sites where input data may be found (e.g. on orography and land use, emission factors etc.);
- an agreement with USEPA on linking the MDS to similar systems developed in North America; and;
- the expansion to information on model validation.

In the round table discussion held in the final session of the conference, it was emphasised that a procedure is still lacking for “certifying” models to be used for assessments and regulatory purposes. It was confirmed that there is a need for a stronger scientific backing for model validation, especially regarding models other than those used for describing the short-range dispersion of emissions released by single stacks. In this context, useful findings may be expected from scientific results in the frame of the EUROTRAC-2 subproject SATURN.

Papers presented at the Conference:

Moussioupoulos, N., de Leeuw, F., Karatzas, K., Bassoukos, A. (1998) The Air quality model documentation system of the European Environment Agency.

Závodský D., Kiss I., Macoun J., Stedman J., (1998) PTL-AQ task 6: Further development of air pollution modelling infrastructure and applications in PHARE countries.

## 2.7. Assessments and support of EU, international organisations and member countries

### ***Reporting for the Commission under Ozone Directive***

On request of DGXI, the ETC prepared the reports “Exceedance of EC ozone threshold values in Europe in 1997” and “Information Document concerning Air Pollution by Ozone. Overview of the situation in the European Union during the 1998 summer season (April-August)”. The reports were delivered to the Commission and will be published as one EEA Topic Report in 1999.

The ETC also finalised the report “Tropospheric ozone in the European Union, the Consolidated report”. This report, as announced under article 8 of the Ozone Directive (92/72/EEC), was produced on request of DGXI, and in collaboration with WHO and JRC-Ispra. The report was presented and discussed at several meetings of the EC Air Quality Directives Steering Group. It will be published in print by the Commission in 1999 and is available on Internet from the EEA.

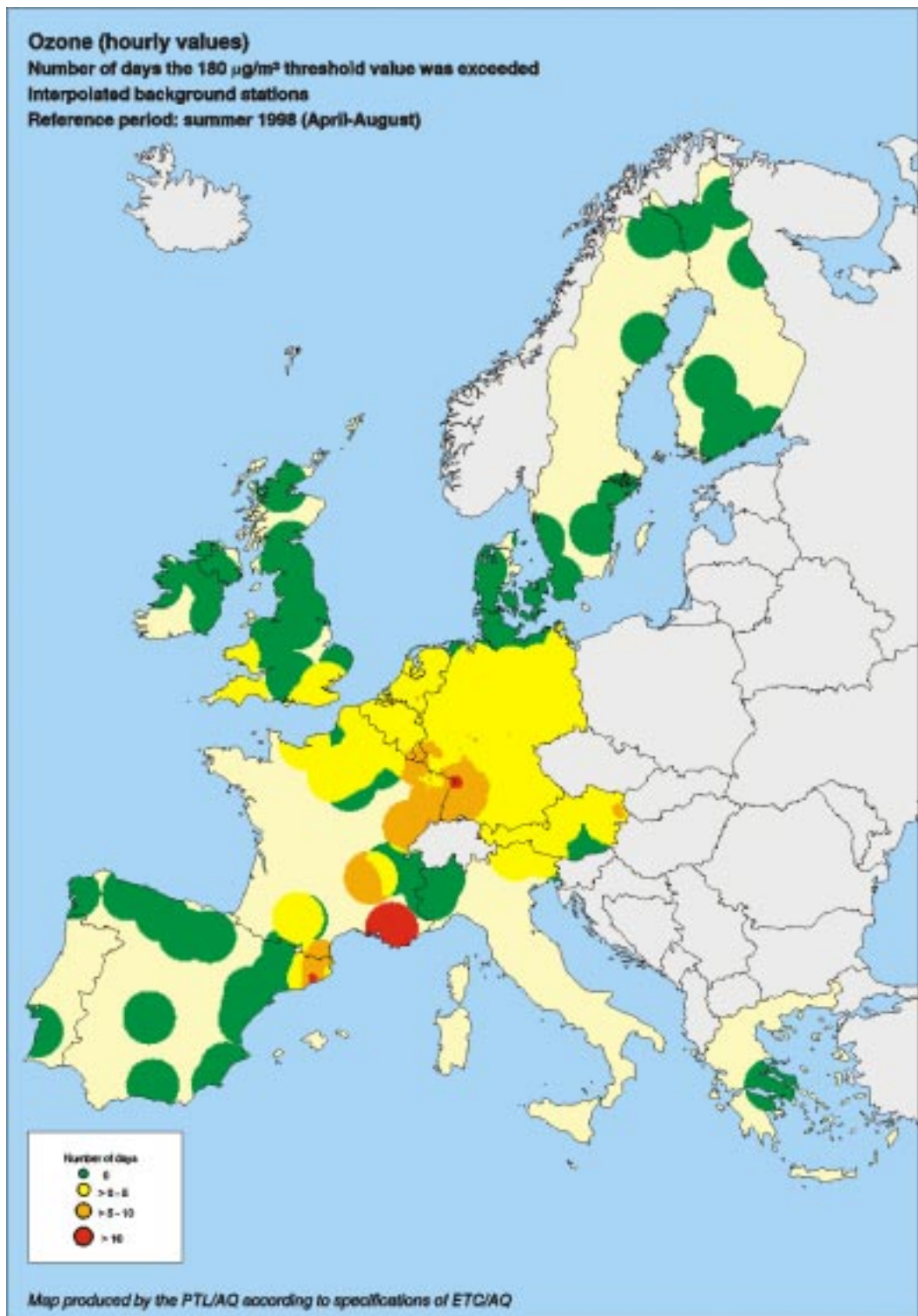
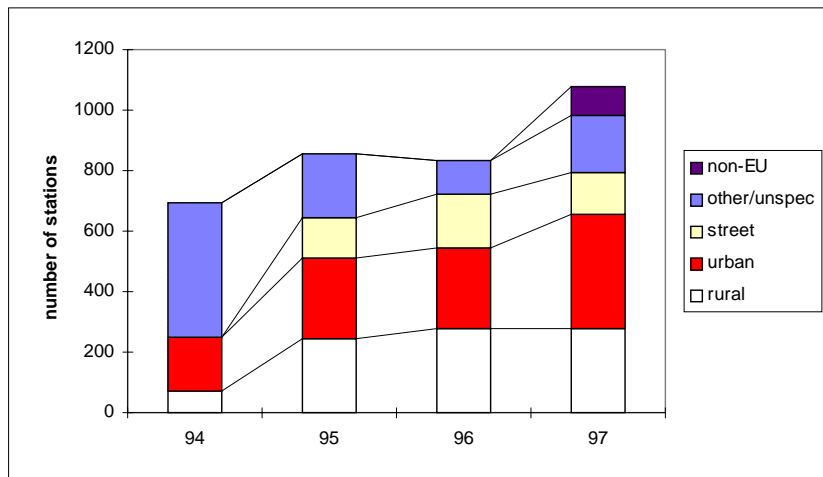


Fig 2.2 Exceedance of health related ozone threshold level during the summer of 1998.  
 Source: "Information document concerning air pollution by ozone. Overview of the situation in the European Union during the 1998 summer season"



### Box 2.5 Air pollution by ozone in Europe. Exceedance of EC ozone threshold values in 1997 and summer 1998

- For the fourth consecutive year ETC-AQ has prepared a report on air pollution by ozone in Europe. The reports were produced on the basis of information submitted by the Member States to the Commission in the framework of Council Directive 92/72/EEC on air pollution by ozone. For the first time, the report on the year 1997 also included data from non-Member States. Ozone monitoring data have been received from more than 1000 stations.



### Number of stations reporting ozone data for inclusion in the Ozone Directive Reports

From an evaluation of the exceedances and annual statistics, the following is concluded:

- In 1997 the ozone threshold value set for the protection of human health ( $110 \mu\text{g}/\text{m}^3$  for 8-hour average concentrations) was exceeded substantially and in all reporting countries;
- In 1997 the threshold value of daily average concentrations set for the protection of vegetation ( $65 \mu\text{g}/\text{m}^3$ ) is exceeded substantially (by up to a factor 3), widely (in all reporting countries) and frequently. The threshold value of hourly average concentrations set for the protection of vegetation ( $200 \mu\text{g}/\text{m}^3$ ) was exceeded largely and widely on a limited number of days;
- In 1997 the threshold value for providing information to the population ( $180 \mu\text{g}/\text{m}^3$  for hourly values) was exceeded in 15 countries of which 12 EU Member States during a limited number of days. During Summer 1998 this threshold was exceeded in all Member States except Ireland, Finland, Denmark and Sweden;
- Exceedance of the threshold value for warning of the population was reported in 1997 from one station (Athens, Greece). In 1998 the threshold was exceeded on three days; in the Athens conurbation twice in July, in France once in August;
- Spatial coverage and documentation on monitoring data quality need improvement. The present subset of rural stations is estimated to allow reliable assessment for only 40-50% of the EU area.

### ***Supporting and improving ozone forecasting and information exchange***

In 1996, a Technical Working Group on Data Exchange and Forecasting for Ozone episodes in Northwest Europe (TWG-DFO) was formed under co-ordination of the ETC-AQ. This group, with experts from 10 countries, met twice in 1996 and 1997, and produced a document published as an EEA Technical Report reviewing national systems for ozone episode forecasting, developing criteria for evaluation, and making recommendations on near-real time exchange of ozone data. Among its recommendations were:

- extending the region of participating countries to southern and central Europe;
- establishing an open data exchange system for near real time ozone data on the Internet;
- jointly evaluating operational forecast systems following common criteria, as developed by the Working Group, in a workshop.

The EEA sent a letter to all member countries and PHARE countries proposing follow-up of these recommendations. As a result, a first meeting could be called for a group of central European countries, to take place in early 1999. On the basis of the TWG-DFO recommendations, the ETC formulated a plan for an open data exchange system. Consultation of the countries did not result in strong support for a workshop to be organised by the ETC-AQ. However, the Working Group on Environment with the European national meteorological institutes (EUMETNET) have shown more interest, and is planning an EUMETNET workshop on ozone forecasting in 1999 with ETC participation.

### ***Participation in EC working groups***

During 1998 ETC experts have continued to support the EC working groups on air quality. The main activities have been the preparation of position papers for ozone and benzene, elaborating the ozone abatement strategy, and in the Steering Group supervising these activities. The position papers are the basis for the Commission's proposals on new Daughter Directives for individual pollutants under the Council Framework Directive on Ambient Air Quality Assessment and Management (96/62/EC). A substantial part of the report "Tropospheric ozone in the European Union, the Consolidated report" mentioned above was also used in the ozone position paper. In preparation for work in 1999, the ETC-AQ assigned experts to four new working groups; one on mercury, one on PAH, one on cadmium, arsenic and nickel; and one on guidance under Article 6 of the Framework Directive.

### ***Guidance report on preliminary assessment under EC Air Quality Directives***

The ETC has in collaboration with experts of DGXI and JRC-ERLAP drafted the "Guidance report on preliminary assessment under the EC air quality Directives". The report provides guidance, not on assessments for compliance under the Directive, but rather in preparation for such assessments, in cases where representative monitoring is not available. The report recommends to use combinations of measurements, emission data,

and modelling for these assessments. This report was finalised early 1998, and published on the EEA website [http://eea.eu.int/Document/Entecrep/guidance\\_report](http://eea.eu.int/Document/Entecrep/guidance_report). It will be published in print by the Commission in 1999.

### ***Support under Exchange of Information Decision***

The ETC has prepared two pilot reports on the basis of air quality monitoring data and information for 1996, as voluntarily submitted by EU Member States under the Exchange of Information Decision. The ETC had an active role in the EC meeting of National Experts to the Exchange of Information Decision in September 1998, where these pilot reports were presented, and where the first official information submission for 1997 under the new Decision (97/101/EC) was prepared. Training with the AIRBASE DEM software supporting this submission was provided, and technical problems were discussed with Member States.

### ***Participation in the Commission's Auto-Oil/Air Pollution Baseline Programme***

Upon request from DGXI EEA supports the Auto Oil II Programme (AOP2). ETC-AQ has, in collaboration with ETC Air Emissions, participated in meetings of the JRC Technical Support Group to WG1 of the Programme and has presented the Generalised Empirical Approach (GEA) as the EEA contribution to AOP2. GEA is a generic approach for assessing air quality in European cities in relation to transport and other source sectors. The work in AOP2 is currently being restructured to serve longer-term objectives and policy developments, under the working title Air Quality Baseline. The report on GEA has accordingly been postponed into 1999.

## **2.8. Contributions to periodical assessment reporting**

### ***Europe's Environment: the Second Assessment***

The ETC finalised its contributions to the report "Europe's Environment: the Second Assessment", published by EEA in June 1998. The data collected by questionnaire for all larger cities for the chapter "The Urban Environment" was made available on the ETC website.

### ***The EU98 report***

This report considers the State of the Environment and expected developments until 2010 in the European Union, with attention for the situation in accession countries where possible. The ETC had responsibility for collecting data, analysing these and writing the chapters on stratospheric ozone, photochemical smog (tropospheric ozone), and acidification, and contributed to the chapter on urban stress. These problems were analysed in the EEA DPSIR assessment framework (Driving forces, Pressures, State, Impact, Responses). As many of the D, P and R factors are common to the photochemical smog and acidification problems, it was decided to combine these in one chapter on "Transboundary Air Pollution". The outlook to 2010 was largely produced in the project "Economic Assessment of priorities for a European

Environmental Policy Plan” commissioned by DGXI to a consortium led by RIVM. Some outlook aspects, notably on urban air pollution, were supplemented by separate studies by the ETC (see Fig 2.2). The PTL partners contributed a case study on the Black Triangle area. The ETC also produced a number of fact sheets, documenting the procedures for outlooks on air quality, and assessing the causes for the developments.

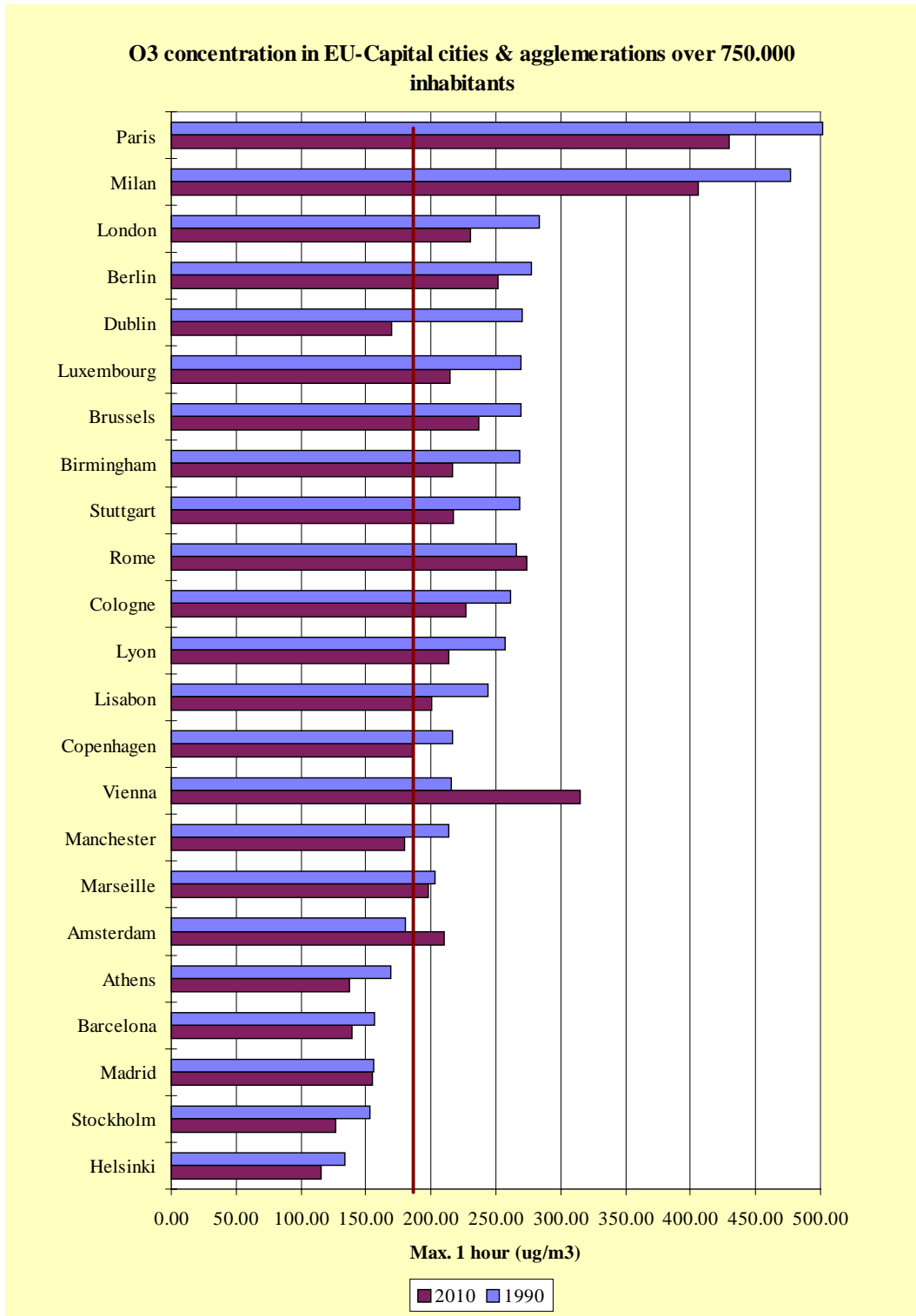


Figure 2.3: Computed maximum urban ozone concentrations in 1990 and 2010<sup>1</sup>. An ETC-AQ contribution to the EU98 report.

***Pilot reports under Exchange of Information Decision***

The ETC has prepared two pilot reports on the basis of air quality monitoring data and information for 1996, as voluntarily submitted by EU Member States to the Commission under the Exchange of Information

<sup>1</sup> Moussiopoulos N. and Sahm P., (1999), The OFIS model: An efficient tool for assessing ozone exposure and evaluating air pollution abatement strategies, Int. J. Environment and Pollution, in press.

Decision (see Box 2.6). In future these reports will be prepared each year. As submission of 1997 information was not complete before the end of 1998, reports on 1997 will be prepared in 1999.

### Box 2.6 Pilot reports under the EC Exchange of Information Decision

#### **1996 PILOT TECHNICAL REPORT**

on Meta Information and Air Quality data collected in the framework of EU Council Decision 97/101/EC on 'Exchange of Information'

Six Member States provided, by June 1998, recent information on their operational air quality monitoring networks and stations. For other countries this information has not been updated. The information has been standardised to improve comparability and quality of the information.

Nine Member States provided, by June 1998, 1996 air quality data. Although some problems with data files were encountered, most time series could be uploaded to the EoI database. During this last voluntary year of data exchange, none of the countries extended the list of pollutants for which data was transmitted compared to earlier years.

#### **EUROPEAN AIR QUALITY IN 1996**

On the basis of data transmitted in the framework of the EU Council Decision 97/101/EC on "Exchange of Information".

In the preamble of Decision 97/101/EC it is stated that the information collected should be sufficiently representative to enable pollution levels to be mapped throughout the Community. However, data reported for 1996 are generally less than required. Characterisation of the stations emission environment, which is essential for proper assessment of air quality, is incomplete. As a consequence, it is not possible to describe and map the pollution levels in the EU with sufficient coverage and accuracy.

The data in the EoI database AIRBASE has become rather fragmented during the period of voluntary data transmissions. Hence, it is not possible to assess recent time trends in air pollution levels in the Community.

It is recommended that Member States reconsider station selection and submit, as far as possible, data collected between 1989 and 1996.

### 3. Reports and other products prepared by ETC-AQ

Reports marked with \* are available on the EEA website or via the links on the ETC-AQ website <http://www.etc-aq.rivm.nl/publications.htm>.

#### ***Reports published in print by EEA in 1998 and before***

- Requirements on European air quality monitoring information, EEA Topic Report 17/1996\*
- Review on requirements for models and model applications, EEA Topic Report 18/1996\*
- Ambient air quality, pollutant dispersion and transport models, EEA Topic Report 19/1996\*
- Air quality in Europe 1993, a pilot report, EEA Topic Report 25/1996\*
- Report on state of the air pollution monitoring situation in Europe - problems and trends, EEA Topic Report 26/1996\*
- Air pollution by ozone in the European Union; Exceedance of ozone threshold values in 1995 and summer 1996, EEA Topic Report 29/1996\*
- Air Pollution in Europe 1997, EEA Environmental Monograph No.4 (in collaboration with ETC Air Emissions)\*
- Air pollution by ozone in the European Union; Exceedance of ozone threshold values in 1996 and summer 1997, EEA Topic Report 7/1997
- Annual Summary report 1995, EEA Topic Report 22/1996\*
- Annual Summary report 1996, EEA Topic Report 5/1997\*
- Annual Topic Update 1997, EEA Topic Report 3/1998
- National ozone forecasting systems and international data exchange in Northwest Europe , EEA Technical Report 9/1998

#### ***Reports submitted to EEA for publication in 1999***

- First evaluation of the representativeness and quality of monitoring network and stations
- Selection of models and input data for groups of applications
- Workshop Report. European Workshop on air quality monitoring and assessment, Brussels, 22-23 September 1997

#### ***Reports submitted to EEA and CEC for publication***

- Guidance report on preliminary assessment under EC air quality directives (EC publication in 1999) (collaboration with DGXI, Member States, ETC Air Emissions, JRC)\*
- Tropospheric ozone in the European Union - the consolidated report (collaboration with DGXI, Member States, WHO and JRC-ERLAP)\*

#### ***Final draft reports presented at the third EIONET workshop for EEA publication in 1999***

- Criteria for the design of EUROAIRNET. The EEA air quality monitoring and information network

- EUROAIRNET Site selection 1998
- AIRBASE: 1998 status and developments foreseen
- Model applications in the assessment of urban air quality

***Draft reports presented and discussed in 1998 at CEC meeting with Member States for EEA publication in 1999***

- Exceedance of EC ozone threshold values in Europe in 1997 (final version).
- Information document concerning air pollution by ozone. Overview of the situation in the European Union during the 1998 summer season (final version).
- Pilot technical report on meta-information and air quality data collected in the framework of EU Council Decision 97/101/EC on Exchange of Information (draft)
- European air quality in 1996, on the basis of data transmitted in the framework of EU Council Decision on Exchange of Information (draft)

***Draft reports/ contributions submitted to EEA***

- Chapters to the report “Environment in the European Union at the turn of the century”:
  - Stratospheric ozone depletion
  - Transboundary air pollution
  - Urban area - air pollution section
- Criteria for the selection of atmospheric dispersion models in ETC-AQ applications
- Monitoring of air quality (final draft for joint WHO/EEA Pamphlet)

***Papers presented in 1998***

Moussiopoulos, N., de Leeuw, F., Karatzas, K., Bassoukos, A. (1998) The Air quality model documentation system of the European Environment Agency. Paper presented at 5<sup>th</sup> international conference on harmonization of atmospheric dispersion modelling, May 1998, Rhodes, Greece.

Závodský D., Kiss I., Macoun J., Stedman J., (1998) PTL-AQ task 6: Further development of air pollution modelling infrastructure and applications in PHARE countries. Paper presented at 5<sup>th</sup> international conference on harmonization of atmospheric dispersion modelling, May 1998, Rhodes, Greece.

***Other products in 1998***

- Data Exchange Module with Manual and help function\*
- Third EIONET workshop on air quality assessment and management, Copenhagen, 12-13 October 1998 (Proceedings to be published in 1999)
- ETC Internet website (restyled in 1998) <http://www.etcaq.rivm.nl/>
- PTL Internet website <http://www.chmi.cz/ptl/>
- Information and documentation system on atmospheric models on the Internet, updated version 2.0 (<http://aix.meng.auth.gr/lhtee/database.html>)\*



## 4. Plans for 1999

This chapter reflects the status of planning in January 1999. Changes may occur during the year.

### 4.1. Air quality aspects of EIONET

An important highlight will be the fourth EIONET Workshop on Air Quality Assessment and Management (see 4.2) which, as in previous years, will be held with all EEA/PHARE countries in September. During the year, all countries will be kept informed about work planning and progress. There will be two joint newsletters, and the website will be updated frequently. The Annual Topic Update report 1999 will be produced in January 2000.

### 4.2. Further development of the air quality monitoring network EUROAIRNET

The acceptance of new sites and documentation of QA/QC procedures in EUROAIRNET is to be continued, together with evaluation of EoI networks, leading to proposals for improvement. Visits to EEA member countries and PHARE countries are scheduled, where the status of selected national sites, QA/QC and data availability will be discussed with PCPs. A status report on EUROAIRNET will be presented to fourth EIONET Workshop on Air Quality Assessment and Management, summarising progress in site selection, results of country visits, and international monitoring.

### 4.3. Further development, implementation and update of AIRBASE

The challenge for this year is to upgrade the air quality information system AIRBASE within a wider framework, facilitating access to air pollution information, including databases, reports, guidance documentation, and the model documentation system.

The AIRBASE Web application will be much improved providing maps, graphs and tables output. The Data Exchange Module will be extended with functionality requested by the users. The development is carried out within the project IRENIE under the DGXIII Telematics Applications Programme. The help desk function will be continued.

The contents of the AIRBASE database will be updated with data from the Exchange of Information Decision (EoI), the data under the Ozone Directive, and data from EUROAIRNET.

### 4.4. Further development of air pollution modelling infrastructure and applications

The Model Documentation System will be maintained and expanded following the recommendations of the evaluation workshops held in 1997/98. Emphasis will be on validation aspects. The ETC will report progress and evaluations at the Conference on model harmonisation in

Rouen, in October 1999. Further work is foreseen in guidance on urban modelling under the Framework Directive (see 4.5)

#### 4.5. Assessments and support of EU, international organisations and member countries

The ETC will continue to support DGXI and Member States in their work on developing new Air Quality Directives and implementing existing ones. Contributions are scheduled to the EC Working Groups on Hg, metals, PAH, guidance on assessment, and Exchange of Information.

In the follow-up to the Auto Oil II programme, the EC Air Pollution Baseline, the ETC will, in collaboration with ETC-AE and JRC, quantify the potential for improved air quality in European cities through transport related measures, in a generic approach.

As a follow-up on the work of the TWG-DFO, see 2.7, a pilot system for near real time ozone data exchange will be established on the Internet. A working meeting will be held with a group of central European countries to discuss and update the TWG-DFO report, and results will be communicated to the countries and to EUMETNET.

Further steps will be taken to harmonise and facilitate data submission under EC Exchange of Information and UN-ECE-EMEP; preparations will be made for co-ordinated data reporting with EUROSTAT and OECD.

#### 4.6. Contributions to periodical assessment reporting

The ETC contribution to the EEA "EU98" report, writing the chapters on stratospheric ozone depletion, acidification/tropospheric ozone and providing material on air quality for other chapters will be finalised early 1999.

The ETC will contribute to the development of the first EEA indicator report to be published at the end of 1999, including data collection, analyses of the relevant information, fact sheets and drafting parts of the report. The ETC will also assist in the preparation of the EU Transport and Environment Reporting Mechanism indicator based report.

As in previous years, two ozone exceedance reports are scheduled for October 1999, on the basis of data submitted under the EC Ozone Directive, on the year 1998, and on summer 1999. These will include data and information from EU, PHARE and other European countries.

The ETC will, on request of DGXI, produce a report on air quality based on 1997 EoI information as required in the EoI Decision, and a technical report on the submission of data and information. The PTL partners will in parallel produce the report "Air Quality in PHARE countries 1997".

Depending on timely submission of 1998 data, such EoI reports will also be produced by the end of 1999 or the beginning of 2000.

#### 4.7. Annex. National Primary Contact Points on air quality

EEA Country	Status	Contact person	Institution/Address	Tel./Fax/E-mail
Austria	NRC	Mrs. Ruth Baumann	Umweltbundesamt Wien Department Air Quality Spittelauer Lände 5 A-1090 Wien	Tel: +43-1-31304 5852 Fax: +43-1-31304-5400 E-Mail: baumann@ubavie.gv.at
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List of the NFPs of the PHARE countries

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Albania	Mrs. Ermira Basha	National Environmental Agency Bulevardi "Bajram Curri" Al-Tirana	Tel: +355-42-64 903 Fax: +355-42-65 229/646 32 E-Mail: cep@cep.tirana.al
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