

EMEP 20-years Assessment Report

Gun Lövblad IVL 2001-05-31

The assessment of EMEP data during 20 years

The Task Force on Measurement and Modelling has taken responsibility for assessing the changes during the period 1980 - 2000 in:

- deposition
- concentrations
- transboundary fluxes

Parameters to be studied are sulphur, nitrogen compounds, ozone and VOC. Heavy metals and POPs will be studied for time series of some length.

WHY?

The aim of the study is to serve national needs and to provide an evaluation which could be of use for the coming revision of the Gothenburg protocol. It may further help to improve our understanding of trends and fluxes

Background

Control actions over Europe have resulted in improved environmental quality. It is important to show the present status in different parts of Europe to find out:

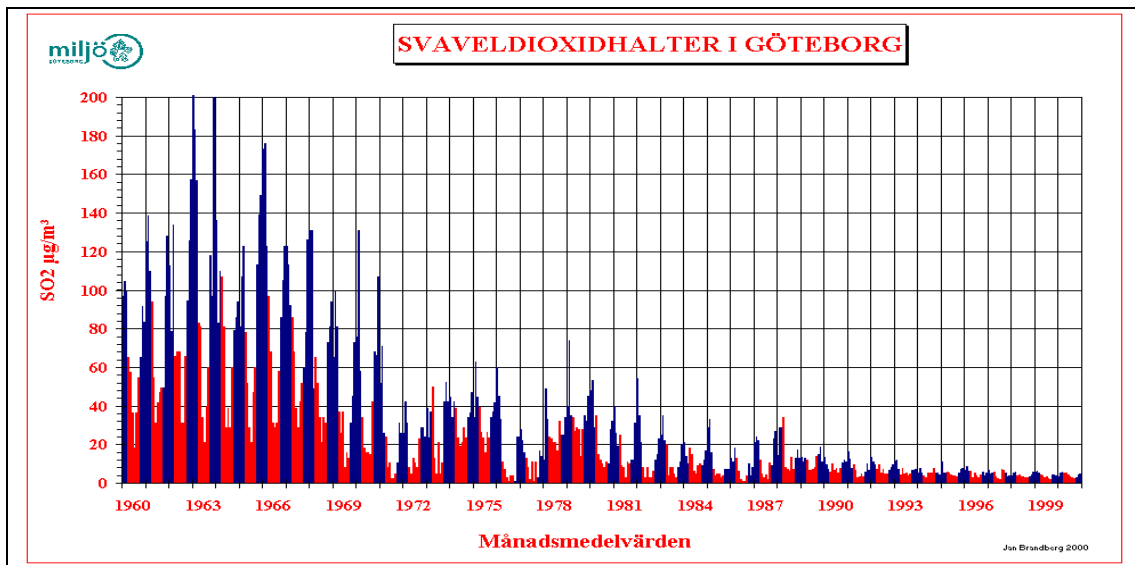
- Which actions have had the largest effects?
- Which source areas have been mainly controlled?
- How is the improvement related to emission changes and money invested?
- Which further improvements are necessary?
- What are the national - regional consequences of the decreased emissions?

Monitoring sites near the sources give a rapid response when control actions are undertaken. Most EMEP sites are located at some distance from emission sources and not directly influenced. The trends become more subtle and may take some time to reveal.

Example: the Swedish trends in sulphur and nitrogen

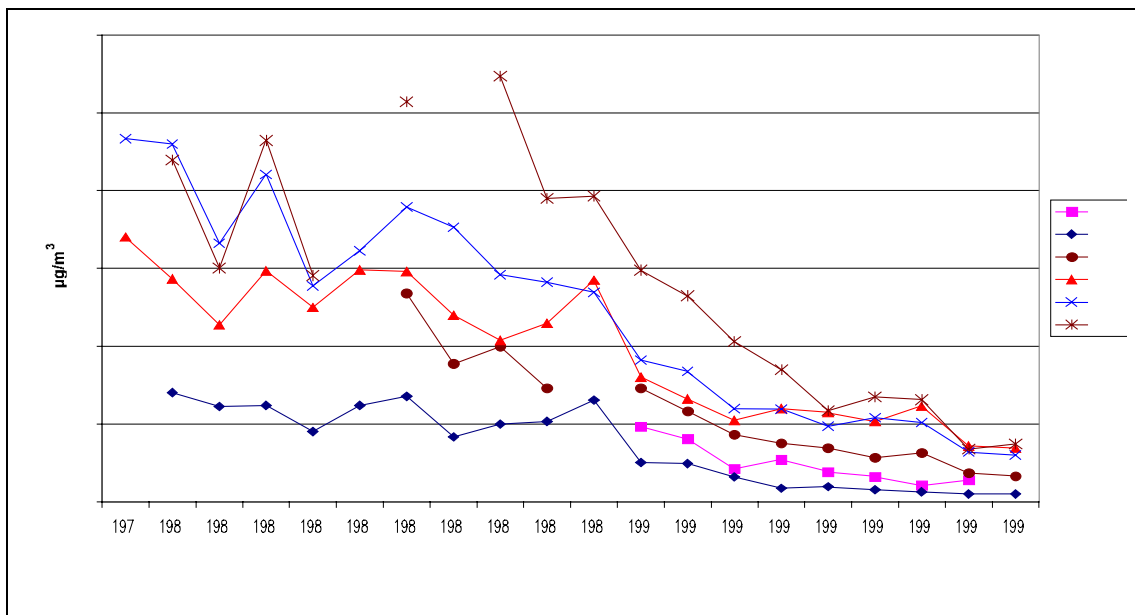
Local actions to reduce emissions decreased rapidly the SO₂ levels in urban areas See figure below showing the city of Göteborg (www.goteborg.se).

Figure 1 Monthly means of sulphur dioxide in the town centre of Göteborg 1959 -2000



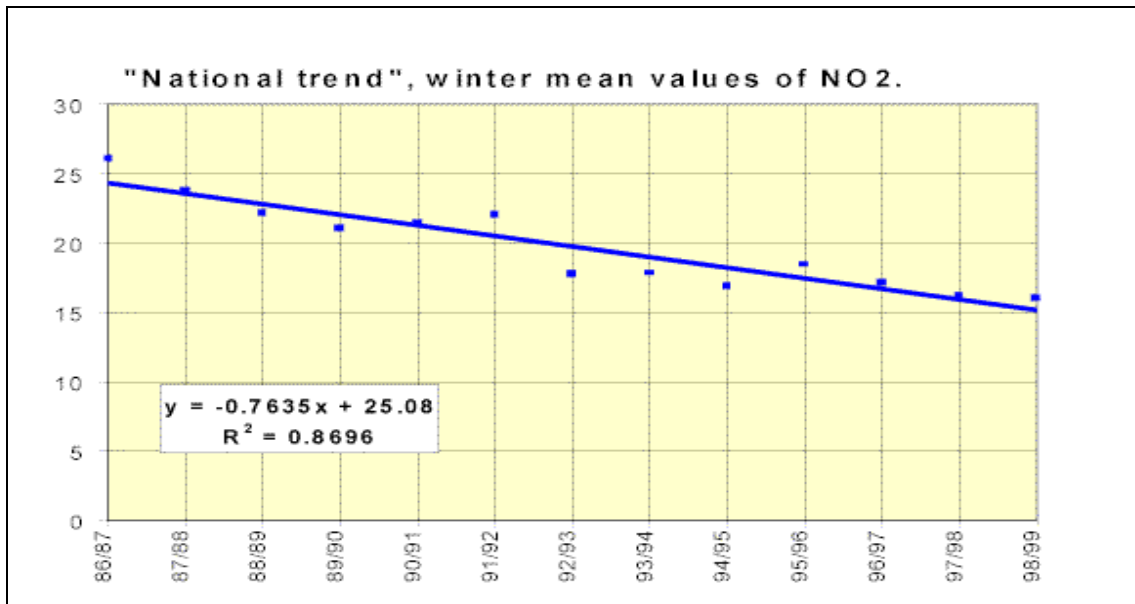
The trends for SO₂ at EMEP sites where measurements started in 1979 show a definite decrease most marked from 1990 (Sjöberg et al 2001), see figure 2.

Figure 2 Annual averages of SO₂-S in air 1979 to 1998 (µg S·m⁻³) at the six Swedish EMEP stations Esrange, Breckälven, Aspvreten, Hoburg, Rörvik, Vavihill.



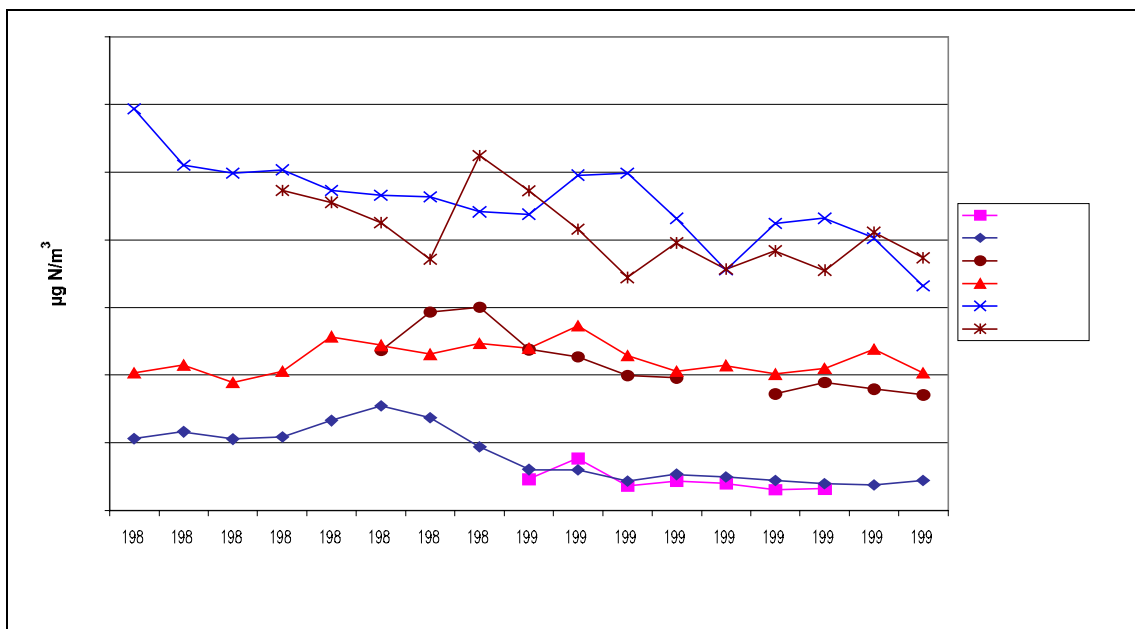
Similarly, actions against NO_x emissions, mainly the introduction of 3-way catalysts on petrol cars have decreased the NO₂ levels in Swedish urban areas. The trends in the "average Swedish city" is shown in Figure 3 (from www.ivl.se).

Figure 3 The "average trend" of NO₂ (µg·m⁻³) in Swedish urban areas from 1986-1999



If the trend from EMEP-data in database is studied a constant level of NO₂ - or even partly increasing - is found. This resulted in some confusion when the Nordic NO₂ trends were compared (Barrett et al 2000). However when the same trend is studied from national data a trend more in line with what is expected (Figure 4). This underlines the need for national data validation and assessment of data!

Figure 4 Trends in NO₂ at the Swedish EMEP sites (Sjöberg et al, 2001)



How will the assessment be carried out?

A large number of actors will participate in the assessment work, mainly the national experts related to EMEP and the EMEP centres. IVL Sweden has taken the editorial responsibility of the report. The assessment will be based on

- validated measurement data
- modelcalculated data
- transport data (sectorial data and trajectories)
- emission data

The national experts are responsible for checking and evaluating their data. The EMEP centres provide validated data, advice and methods. TFMM will be a forum for dialogues on the national assessments. IVL, Sweden via Gun Lövblad will lead the assessment project and compile the results into a report. An editorial group will take part in the reporting.

WHEN?

The evaluation of data and the assessment will start this summer and is to be carried out within the coming 2 years. The report finished and in print by the end of 2003. A more detailed working programme will be prepared after contacts with the countries, and will be presented to the EMEP Steering Body meeting in early September.

Daily data (monitoring and modelling) are now available on the internet for the EMEP sites <http://www.nilu.no/project/ccc/timeseries>. See further the presentations by the EMEP centres (Kjetil Tørseth and Leonor Tarrasón). Also trajectories and sector analysis data are presented as well as emissions per 50x50 km grid square and for the country as a whole per source type.

Report

The report will consist of two parts; Part 1 National reports and Part 2 Overall assessment over Europe. All authors will have their names in the report.

Interest for taking part in the overall assessment has been shown by the following countries:

- Czech Republic
- Finland
- France
- Italy

In addition Estonia - Latvia - Lithuania plan to make a Nordic - Baltic countries in cooperation with the Finland, Denmark, Norway and Sweden.

Financing of the work

The assessment will be financed basically with national funds. The editorial work is financed by the the Swedish ASTA project. The EMEP-centres will fund their work with data deliveries, advice and methods from their own sources. In addition other funds are necessary, such as Nordic Council of Ministers (NMR), EU, etc. It is important for the national experts also to find the funding of their work.