

Annex 3

Local Verification results – Paris

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LOCAL VERIFICATION RESULTS OF PARIS

Indicator 1: Accuracy of DOAS equipment compared with traditional equipment

Paris has not made any new developments with the DOAS equipment within the HEAVEN project. Only the past experiences are reported here.

Airparif used a DOAS installation in the inner city of Paris from 1989 to 1997.

The installation used two optical rays at a height between 20 and 30m above the ground.

- A ray with a length of 1600m detected the pollutants NO₂, O₃, SO₂.
- From 1992 onwards, a ray with a length of 220m detected SO₂, NO₂ and NO.

The installation was demounted in 1997.

The experience revealed meteorological difficulties.

A linear calibration made by the supplier of the equipment was used. It was based on two artificial extreme situations: two glass cells containing known pollutant concentrations were placed between the emitter and the detector, the latter being at very close distance.

1. Concentration in glass cell below detection level
2. Very high concentration in glass cell.

This calibration was inaccurate in situations of:

- Humidity
- Inconsistent intensity of the optical ray
- Strong variations of concentration along the ray (e.g. above street canyons).

Indicator 2: Accuracy of roadside description, air models

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Relative differences between measured and modelled street level concentrations				
NO _x and NO ₂ , annual estimations Model : Street version 4	3 years	Relative difference below 21% for the three traffic sites where measurements were available	Differences below 30%	OK
CO, annual estimations Model : Street version 4	3 years	Relative difference below 24% for the three traffic sites where measurements were available	Differences below 30%	OK
Benzene, annual estimations Model : Street version 4	1 year	Relative difference below 9% for the two traffic sites where measurements were available	Differences below 30%	OK

NO _x , hourly estimations Model: Adaptation of Street version 4	3 days 6:00-19:00	Relative difference above 50% for 3 of 39 hourly estimations	Differences below 50%	NOT OK
CO, hourly estimations Model: Adaptation of Street version 4	3 days 6:00-19:00	Relative difference above 50% for 10 to 12 of 39 hourly estimations	Differences below 50%	NOT OK

To which process(es) does the above table refer?	P5.4 Street level dispersion modelling
What method(s) were used for testing?	Comparison of measured and modelled values for "Rue Bonaparte", "Av. des Champs-Élysées", "RN13" for annual results Comparison of measured and modelled values for "Rue Bonaparte" test site for hourly results.
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	1999-2001 for annual estimations 22 nd 24 th November 2001 for hourly estimations with adaptation of Street model version 4
Any other remarks concerning this indicator?	See following detailed report.

Concerning the roadside description, two main objectives need to be achieved in the framework of the HEAVEN project at the Paris site. These are:

1. to be able to evaluate, on an annual basis, the air quality for each link of the whole Ile-de-France regional reference network (~ 39000 links, L ~20 000km)
2. to be able to reduce from an annual evaluation to an hourly evaluation based on near real-time traffic, meteorological and background concentration data for the main road network within the dense urban area (inside the circle limited by the A86 motorway) (L ~ 3 350 km (for 1, 8 or 24 hour evaluation)

The roadside air pollutant concentrations will be evaluated according to the ad hoc EU definitions, provided by the directive 1999/30. With respect to the most "critical" reference values defined by the daughter air quality directives, the results concern:

- the 24-hour-value for PM₁₀,
- the 1-hour-value for NO₂,
- the 8-hour-value for CO,
- the annual value for C₆H₆,
- every year, annual statistics based on these results will also be described (annual average, P50, P98...) according to the air quality daughter directives.

1. Annual estimations:

The first objective has been achieved using a specific version of the Street model (Version 4). This model allows the calculation of annual concentrations on a large number of road axes based on:

- the annual mean traffic conditions (traffic volumes, driving mode, reference fleet, percentages of LDV, trucks, 2-wheelers and buses)
- the street characteristics (canyon, open...)
- the annual background estimates of NO_x, NO₂, CO, SO₂, PM₁₀ and C₆H₆ concentrations
- the annual mean meteorological conditions.

The annual results obtained with the street version 4 model are assessed through a comparison with observed data for three permanent air quality roadside monitoring sites within the Airparif network (Rue Bonaparte, Av des Champs Elysées, RN13) for the years 1999, 2000 and 2001.

The table below describes the street characteristics in terms of the traffic conditions and the geometric configurations.

	Street geometry	Street orientation (N = 0°)	Traffic volume (veh/d)	Average speed (km/hr)	% HDV	% LDV	% buses	% 2 wheelers
Rue Bonaparte	Canyon street, 2 lanes H/L = 1/1	20°	9880	15-25	3	12	2	8
Av. des Champs-Elysées	Open > 4 lanes	300°	76178	15-25	3	12	2	8
RN13	Half canyon Half open H/L = 1/1.5 > 4 lanes	60°	25771	39-52	6	18	10	4

The results obtained with the street version 4 model for these three different sites are displayed in the graphs below and compared with the observed values for the different measured pollutants. The table below gives the relative differences (as a %) of the results in comparison with the observed data over the total three year period.

Relative difference (%)	CO	NO _x	NO ₂	NO ₂ P98	Benzene
Rue Bonaparte	24	-14	-15	-12	-9
Av. des Champs-Elysées	-14	-11	-4	0	-5
RN13	-20	21	13	9	

The success criterion was reached as the difference between the model outputs and the air quality observed data is less than 30 % for the annual statistics (as defined in the Local Verification Plan for Paris).

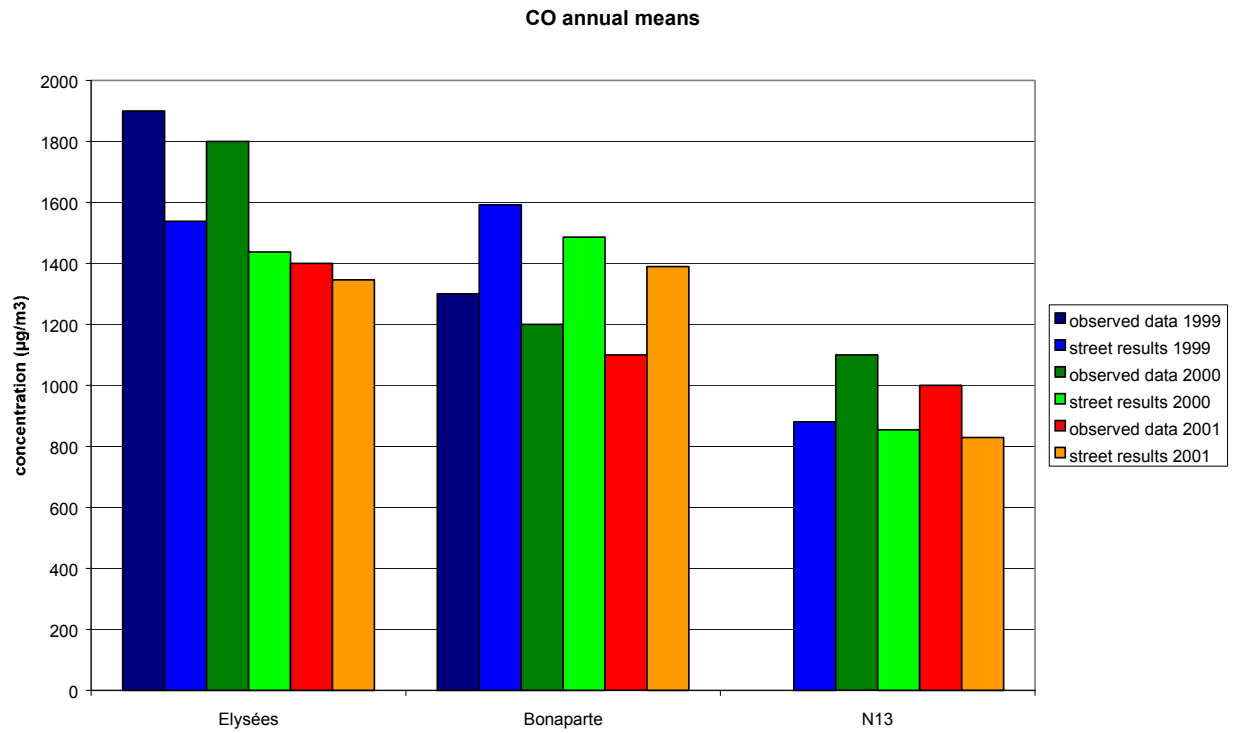
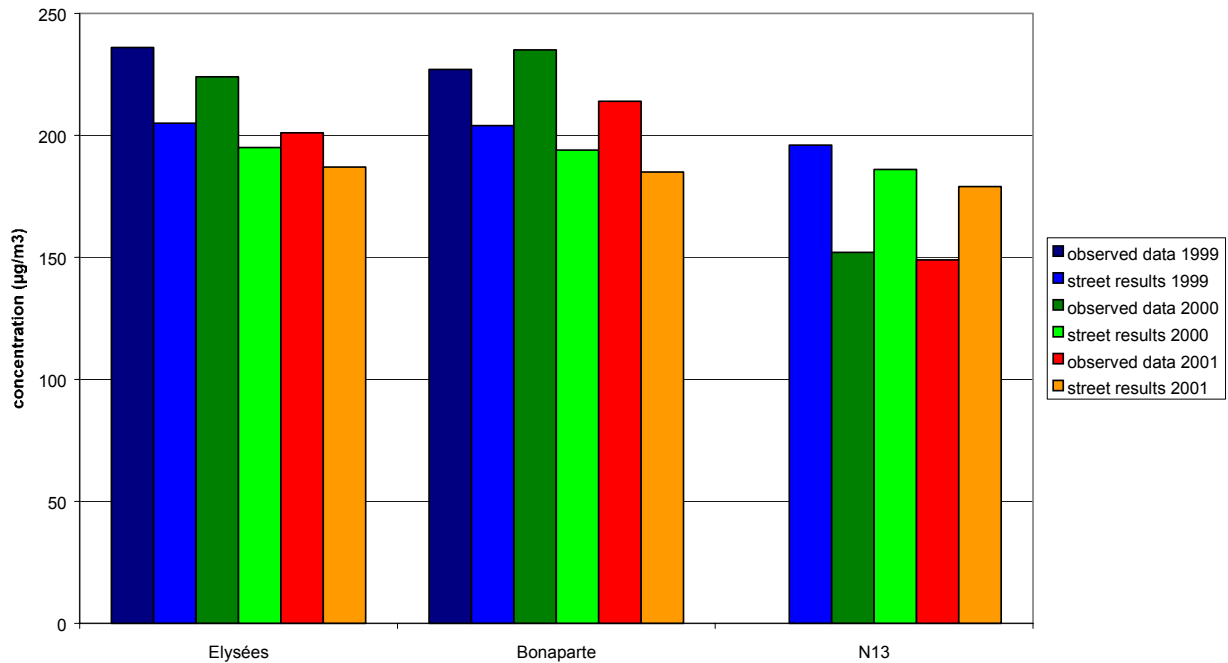


Figure 1: CO annual means

NO_x annual mean (equ. NO₂)



NO₂ annual mean

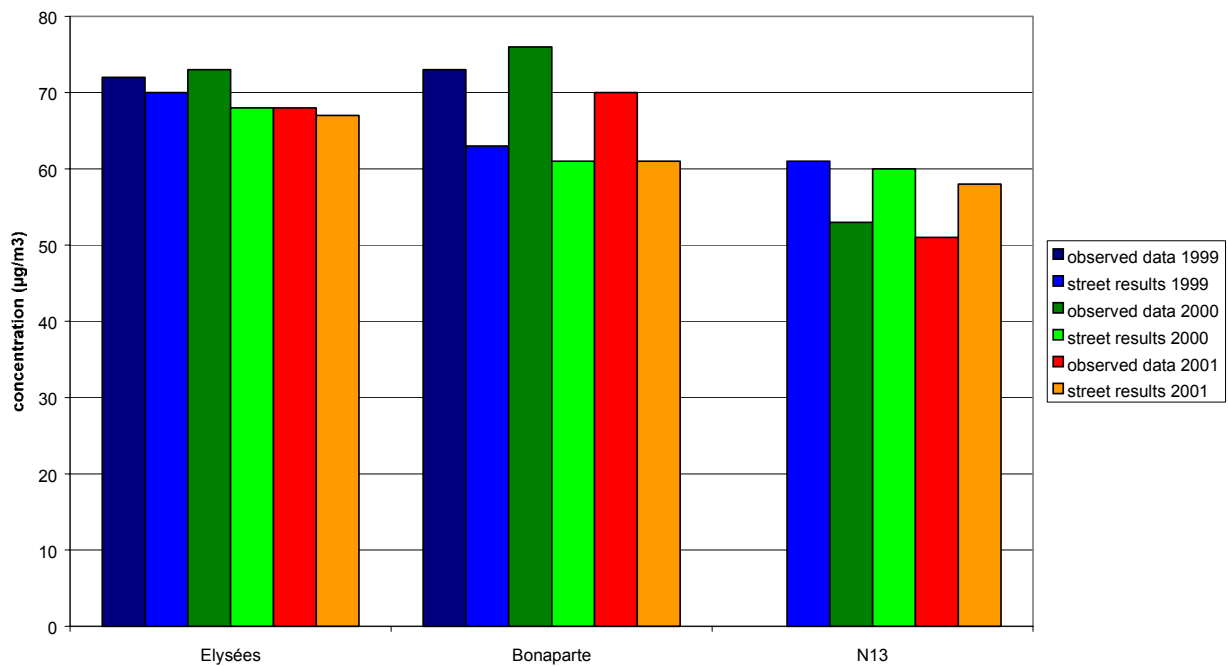


Figure 2: NO_x annual mean (equ. NO₂)
Figure 3: NO₂ annual mean

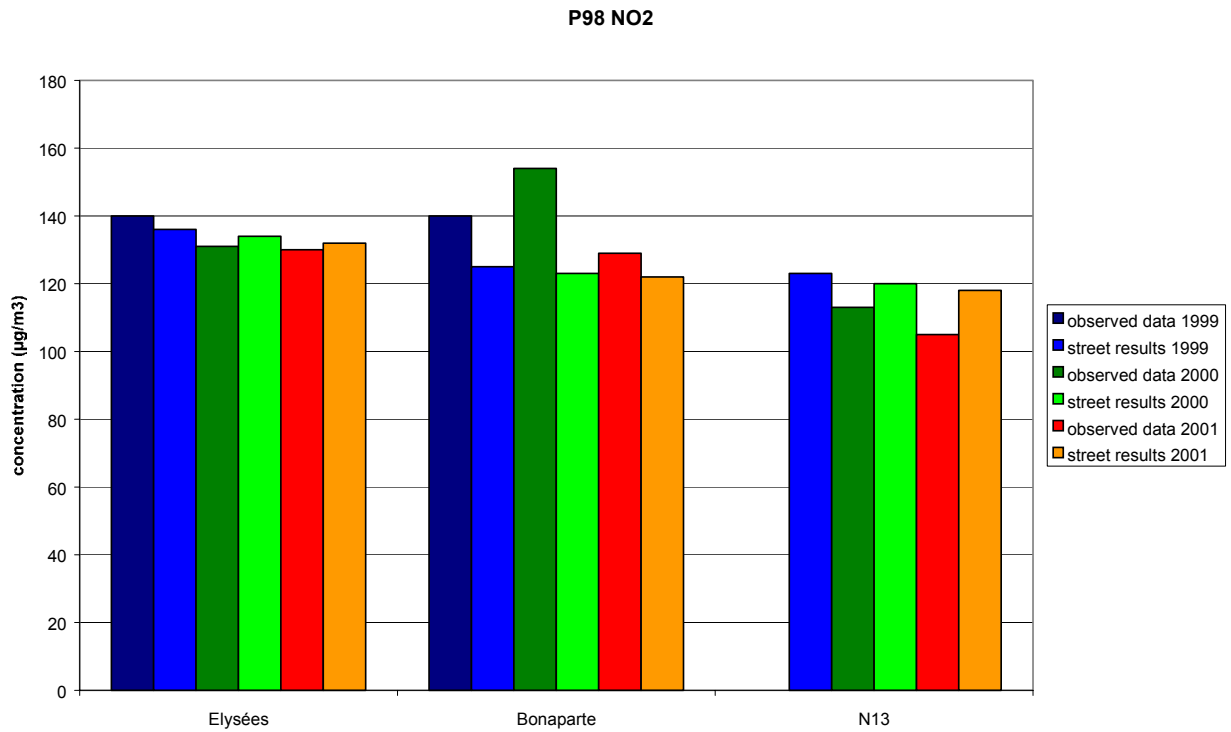


Figure 4: P98 NO₂

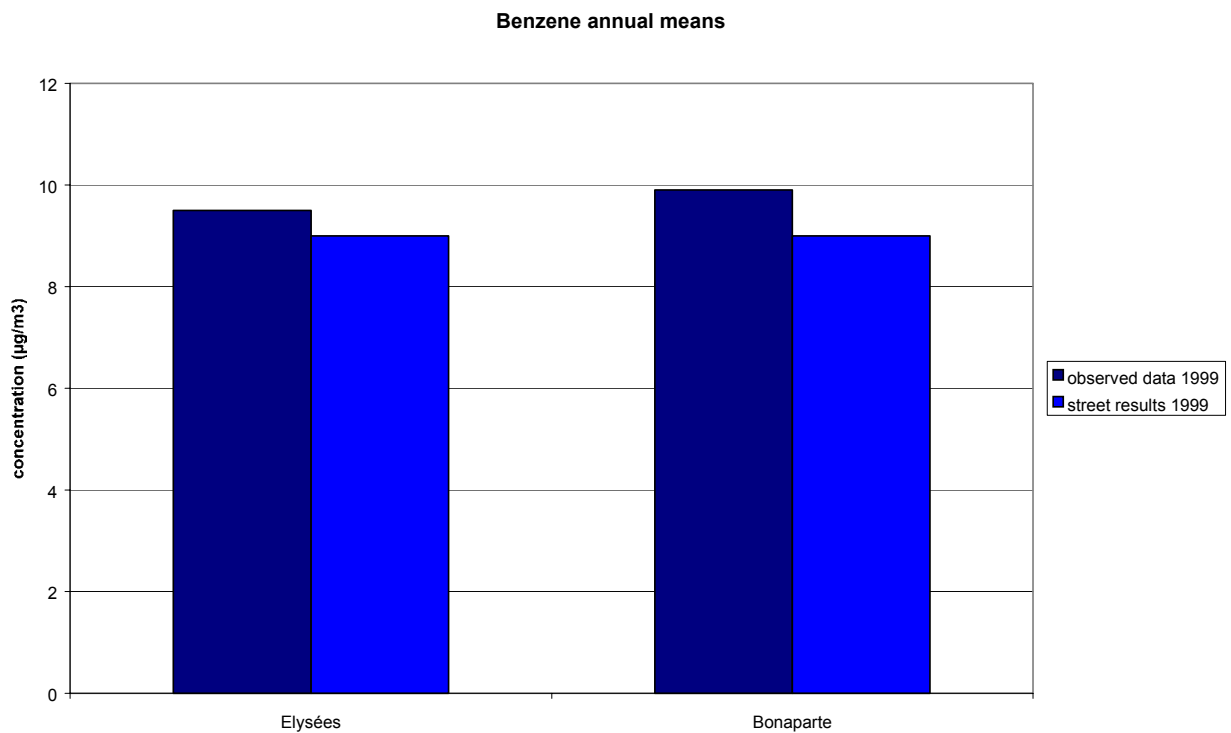


Figure 5: Benzene annual means

2. Hourly estimations :

With regard to the hourly roadside concentration modelling, different approaches were or are still under investigation.

- **The first approach** concerned the adaptation of the street version 4 model in order to deliver hourly estimates instead of annual estimates.

To do this, it was necessary to generate a new database of air quality modelling results for the street model based on hourly simulations (instead of the 15 day long average results in version 4). To achieve this within a reasonable time period, it was necessary to limit the construction of the new database to the street configurations most frequently encountered in the Paris region (10 to 15 different configurations). The simulation for each street configuration could then be conducted by using the Miskam model (which has been used to develop the database of the street model version 4).

Before continuation with this approach, a feasibility study was conducted to validate the approach. This study was carried out on the “Rue Bonaparte” site, where intensive measurements (meteorological mast, NO_x, CO, SO₂ measurements) has been operational since November 2000. The Miskam model was run both with the complex geometry of the “Rue Bonaparte” and with the simplified geometry of a street canyon (as defined in the street model). The results obtained are displayed in the following diagrams.

It can be seen that the success criterion were not reached, as the relative differences between the modelled (for both simplified and complex geometry) and observed values are greater than 50% on a number of occasions (3/ among 39 simulated hours for NO_x, 10 to 12 among /39 simulated hours for CO). Thus, the quality of the results was judged insufficient to continue with this unique approach and hence investigation of other approaches was required.

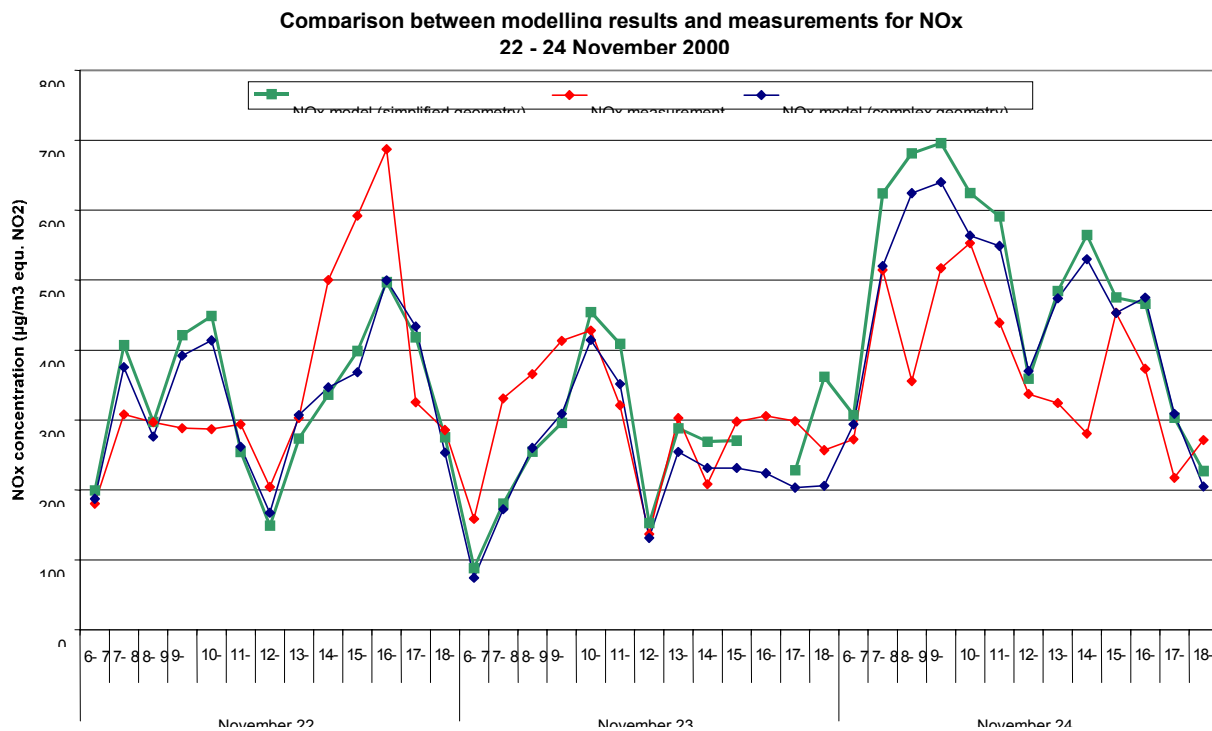


Figure 6: Comparison between modelling results and measurements for NO_x (22nd-24th November 2000)

Relative difference between modelling results and measurements for NO_x
22 - 24 November 2000

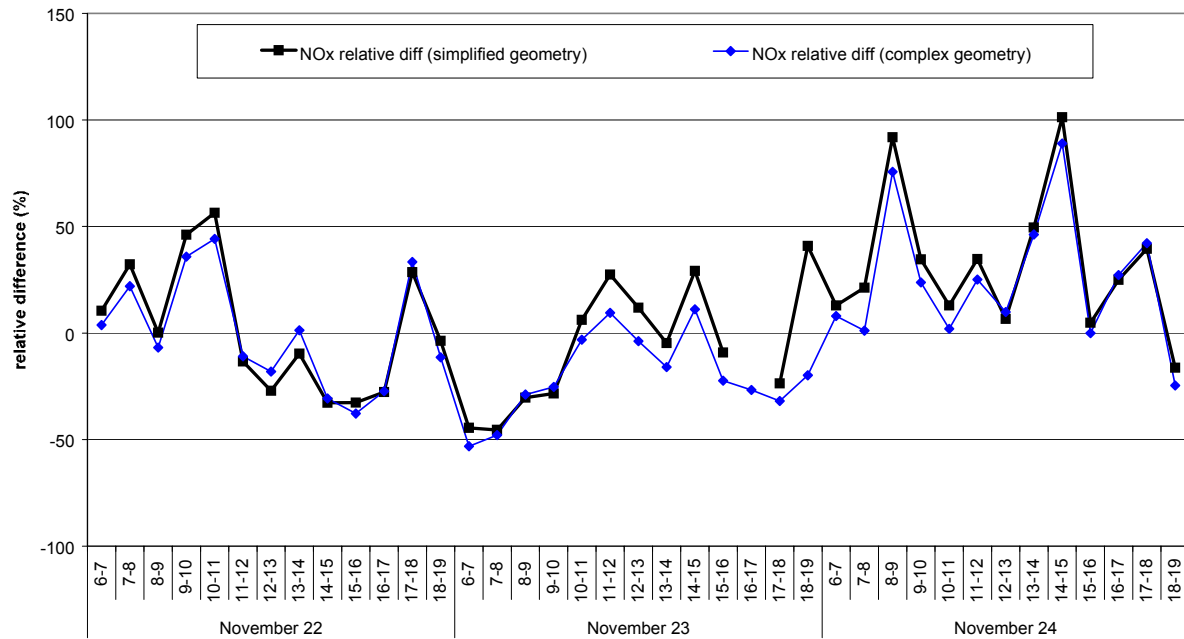


Figure 7: Relative difference between modelling results and measurements for NO_x
(22nd-24th November 2000)

Comparison between modelling results and measurements for CO
22 - 24 November 2000

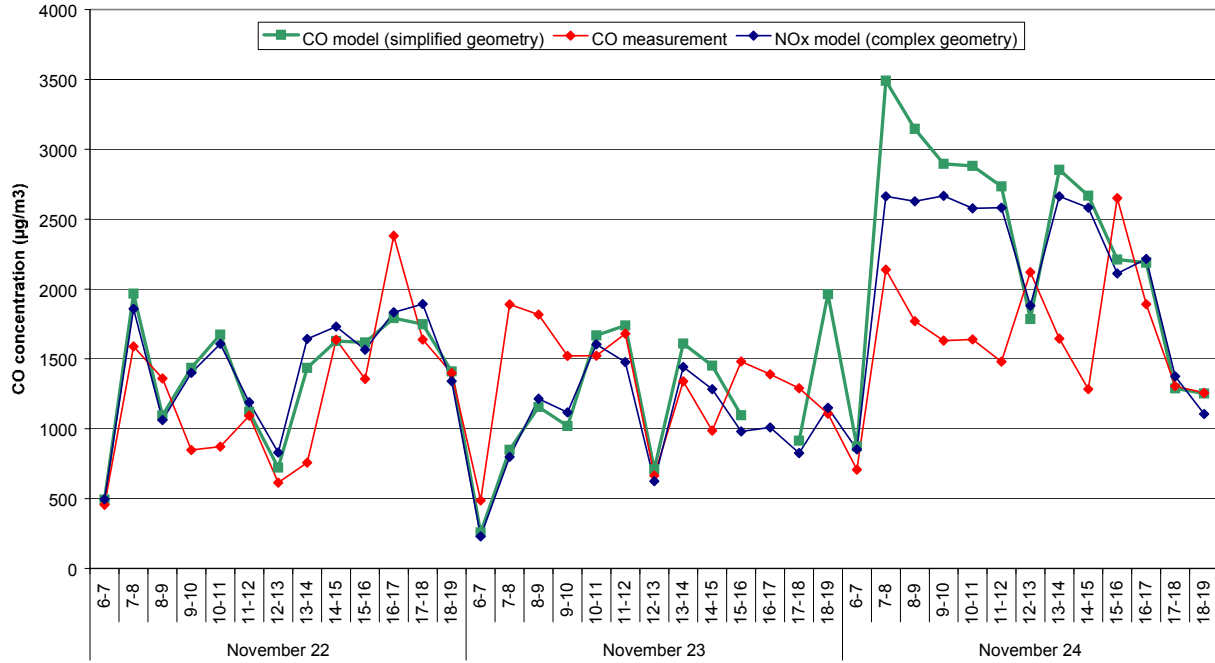


Figure 8: Comparison between modelling results and measurements for CO (22nd-24th November 2000)

Relative difference between modelling results and measurements for CO
22 - 24 November 2000

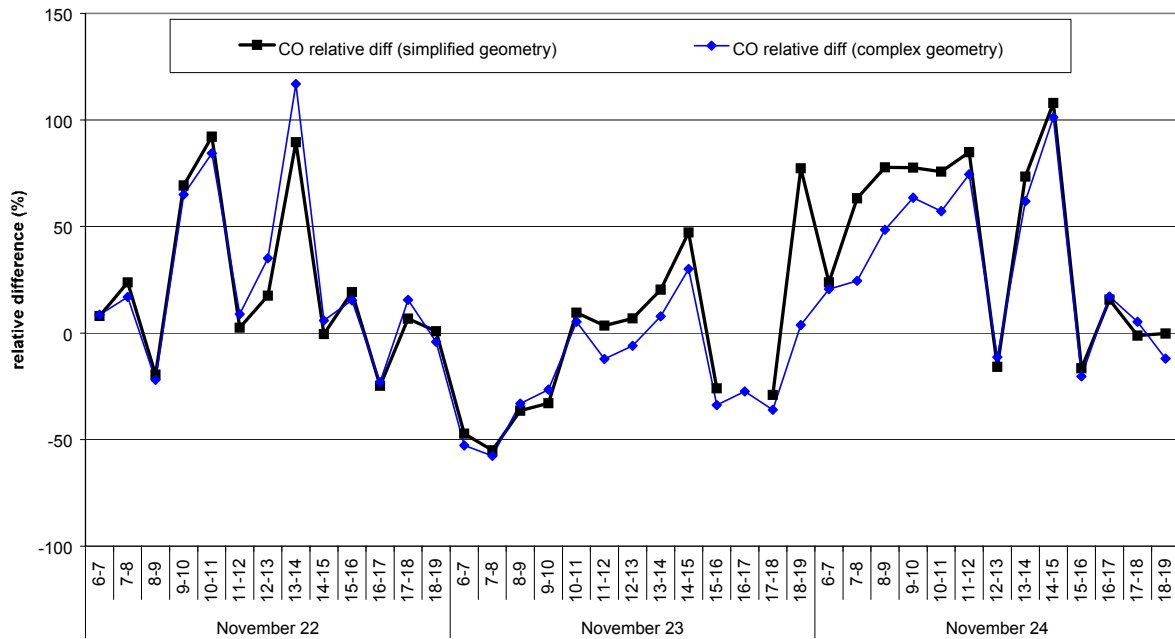


Figure 9: Relative difference between modelling results and measurements for CO (22nd-24th November 2000)

Indicator 4 : Testing processes of DSS interfaces

Indicator 4a: Test Interface to Traffic Monitoring Process (P2.1)

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	95% of time operational	OK
Correct data in and out, referred to data in monitoring station	Tested once	YES	Data in DSS equals data downloaded from the traffic information server	OK
Speed	3 days	5 minutes	Fast enough to allow the entire system to reach an hourly update	OK

To which process(es) does the above table refer?	P2.1 Interface to City of Paris traffic control centre
What method(s) were used for testing?	Data stored in the database compared with received data.
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	10 th - 12 th December
Any other remarks concerning this sub-indicator?	There is no access to the data in the monitoring station. The data stored in the traffic database are direct outputs from "Voirie de Paris".

Indicator 4a: Test Interface to Traffic Monitoring Process (P2.2)

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	95% of time operational	OK
Correct data in and out, referred to data in monitoring station	Tested once	YES	Data in DSS equals data downloaded from the traffic information server	OK
Speed	3 days	15 minutes	Fast enough to allow the entire system to reach an hourly update	OK

To which process(es) does the above table refer?	P2.2 Interface to traffic control centre of SIER
What method(s) were used for testing?	Data stored in the database compared with received data.
Which organization(s) did the testing?	AIRPARIF
When did the testing take place?	16 th - 18 th December
Any other remarks concerning this sub-indicator?	There is no access to the data in the monitoring station. The data stored in the traffic database are direct outputs from "SIER".

	The improvements of the transmission protocol and of the hourly integration module are currently underway. A problem related to the transmission of the SIRIUS data has been solved.
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Indicator 4b: Test Interface to Meteorological Monitoring Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	> 95%	OK
Correct data in and out, referred to Received Data (no Data available in monitoring station)	Tested once	YES	Data in database equals received data from Meteo-France	OK
Speed	3 days	5 minutes	Fast enough to allow the entire system to reach an hourly update	OK

To which process(es) does the above table refer?	P2.3 Interface to meteorological data sources (Météo-France)
What method(s) were used for testing?	Data in database compared with received data from Meteo-France
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	12 th October – 12 th December
Any other remarks concerning this sub-indicator?	Two different servers from the French Meteorological Office (Météo-France) provide data. The first server provides meteorological observations for the previous day from approximately twenty monitoring sites. This acquisition is achieved every day at 11.15 a.m. (local time) using an ftp protocol. The second server provides meteorological forecasts from the ARPEGE model. This connection is achieved three times a day using an ftp protocol.

Indicator 4c: Test Interface to Environmental Monitoring Network Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 months	None	availability of system > 95%	OK
Operational time	3 months	100%	Availability of data > 75%	OK
Correct data in and out, referred to data in monitoring station	3 months	YES	Data in DSS equals data in monitoring station	OK

Speed	3 months	15 minutes	Fast enough to allow the entire system to reach an hourly update	OK
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To which process(es) does the above table refer?	P2.3 Interface to air quality data sources (AIRPARIF)
What method(s) were used for testing?	In the Air Quality Database, the data is post-processed (i.e. data validation through manual intervention). Consequently, real-time data can not be stored in the database if it has been subject to manual intervention.
Which organisation did the testing?	AIRPARIF
When did the testing take place?	September to November 2001
Any other remarks concerning this sub-indicator?	AIRPARIF has obtained ISO 9002 Certification in 2001 and will obtain EN 45001 Accreditation by the beginning of 2002. Air quality data is downloaded four times per day (at ~ 1.00 a.m., 8.00 a.m., 12.00 a.m. and 5.00 p.m. local time).

Indicator 4d: Test Interface to Static & Infrequently Updated Information Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	> 95%	OK
Correct data in and out, referred to data in source	Tested once	YES	Data in DSS equals data in source	OK
Speed	3 days	5 minutes	Fast enough to allow the entire system to reach an hourly update	OK

To which process(es) does the above table refer?	P1 Interface to sources of static & infrequently updated data
What method(s) were used for testing?	Data in DSS compared with data in source
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	10 th -12 th December
Any other remarks concerning this sub-indicator?	The HEAVEN DSS static data is provided by the following partners: topographical data by IGN, land use data by IFEN and AURIF, social and economical statistics by INSEE, street typologies by IAURIF, MEET/COPERT methodology by EEA, national fleet data by INRETS/ADEME, annual emissions for industrial sources by DRIRE, annual emissions for aircraft traffic by ADP and annual emissions for area sources by CITEPA.

Indicator 4e: Test Interface to Information Flow Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	> 95%	OK
Correct data in and out, referred to data in DSS database	Tested once	YES	Data showed on DSS interface equals data in database.	OK
Correct data in and out, referred to data in monitoring station	N/A	N/A	N/A	N/A
Speed ***	3 days	Less than 3 hours	Fast enough to allow the entire system to reach an update every 3 hours	OK

*** Paris: update every 3 hours



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To which process(es) does the above table refer?	P7 Interface to information flow
What method(s) were used for testing?	Data showed on interface compared with data in database.
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	12 th -14 th February
Any other remarks concerning this sub-indicator?	

Indicator 5: Testing DSS modelling and forecast processes

Indicator 5a: Test Air Quality Emission Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	Availability > 95%	OK
Speed	Tested once	40 minutes	Fast enough to allow this sub-system to reach an hourly update	OK

To which process(es) does the above table refer?	P5.1 Traffic related emissions modelling P5.2 Other sources emission modelling
What method(s) were used for testing?	Process delivers outputs as required
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	12 th -14 th February
Any other remarks concerning this sub-indicator?	

Indicator 5b: Test Air Quality Concentration Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
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Number of system failures	3 days	None		OK for background concentrations
Operational time	3 days	100%	> 95%	OK for background concentrations
Speed ****	Tested once	Fast enough to allow the entire system to reach an hourly update	Fast enough to allow the entire system to reach an hourly update	OK for background concentrations

**** Paris: update every 3 hours

To which process(es) does the above table refer?	P5.3 Regional background dispersion modelling and forecasting P5.4 Street level dispersion modelling P5.5 Modelled air quality validation P5.6 Air quality impact evaluation
What method(s) were used for testing?	Process delivers outputs as required
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	10 th -12 th April 2002 for regional background dispersion outputs
Any other remarks concerning this sub-indicator?	All tests concerning Street Level Dispersion Modelling are delayed (see contingency plan D6.2 for further details). New developments are under progress. Background concentrations available only (roadside process tests are scheduled for the end of September 2002)

Indicator 5c: Test Noise Modelling Process

This indicator is not applicable for Paris

Indicator 5d: Test Traffic Modelling and Forecast Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	Availability > 95%	OK
Speed	3 days	20 minutes	Fast enough to allow the traffic outputs to reach an hourly update	OK

To which process(es) does the above table refer?	P4.1 Traffic status modelling P4.4 Traffic modelled output validation
What method(s) were used for testing?	Process delivers outputs as required.



Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	18 th -20 th February
Any other remarks concerning this sub-indicator?	

Indicator 5e: Test Result Processing Process (just Rotterdam)

This indicator is not applicable for Paris

Indicator 6: Testing DSS operator interface and scenario definition

Indicator 6a: Test DSS Operator interface presentation process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	Number of system failures:		OK
Operational time	3 days	% of total time	> 95%	OK
Correct data in and out, referred to data in monitoring station	Tested once	YES / NO	Presented data in interface equals data in DSS	OK
Speed	3 days	Real-time update	Fast enough to allow the interface to reach an on-line update	OK

To which process(es) does the above table refer?	P8 DSS operator interface
What method(s) were used for testing?	Presented data are analysed
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	10 th -12 th April 2002
Any other remarks concerning this sub-indicator?	

Indicator 6b: Test DSS Operator interface intervention process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3days	None		OK
Operational time	3 days	100%	> 95%	OK
Correct data in and out, referred to data in monitoring station	Tested once	YES / NO	Stored data in DSS equals introduced data	OK
Speed	3 days	Real-time update	Fast enough to allow the interface to reach an on-line update	OK

To which process(es) does the above table refer?	P8 DSS operator interface
What method(s) were used for testing?	Each DSS interface was tested by an operator
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	10 th -12 th April 02
Any other remarks concerning this sub-indicator?	



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Indicator 6c: Test DSS Scenario Process

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	Availability > 95%	OK
Correct data in and out, referred to data in monitoring station *	N/A	N/A	N/A	
Speed **	N/A	N/A	N/A	

* N/A in Paris

** N/A in Paris

To which process(es) does the above table refer?	P6 Scenario definition
What method(s) were used for testing?	The process delivers the required information on each scenario
Which organisation(s) did the testing?	AIRPARIF
When did the testing take place?	10 th -12 th April 2002
Any other remarks concerning this sub-indicator?	The output is stored in the system scenario database that consists of the references to the data sets that constitute the scenarios

Indicator 7: Testing the functioning of the main system components and their interaction

CRITERION	Test period / frequency	Value	Success criterion	OK / NOT OK or N/A
Number of system failures	3 days	None		OK
Operational time	3 days	100%	> 90%	OK
Speed	3 days	Real-time update (as soon as others processes outputs are available)	Fast enough to allow the entire system to reach an hourly update	OK

Which organisation(s) did the testing?	AIRPARIF
What method(s) were used for testing?	All main system deliver outputs as required.
When did the testing take place?	10 th -12 th April 2002
Any other remarks concerning this sub-indicator?	Good level of interaction between all main system components.



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Indicator 8 : Preliminary user acceptance

V.8a and 8b User acceptance by professional users

The information platform, in its unfinished state, was presented to a panel of professional users, at the end of April 2002. Due to the incomplete development, a panel of potential future users who were already familiar with the project were selected.

The presentation was made by F. Mietlicki (head of development team at Airparif). The questions on user acceptance were made by P. Rapp (in charge of WP7 at Carte Blanche Conseil). The panel was made up of the following users, who were all familiar with the project:

- G. Baudez, Carte Blanche Conseil.
- J.L. Gauducheau, Mercur
- D. Gombert, F. Mahé, F. Malet, Airparif
- J.B. Gouesse, SETEC International
- B. James, Y. Ranc, City of Paris
- J. Raffailac, DREIF
- S. Renaud, SIER.

The questions were answered during an open discussion. Hence a single score for each question is reported, which reflected the discussion. The scores are accompanied by comments.

Questions about Functional Requirements		S C O R E
<i>To which extent are the following requirements implemented satisfactory?</i>		
Rating 1-5 (1=not at all satisfactory 5=very satisfactory)		
When the rating is below 4, please ask for an explanation		
Traffic information management		
1	Does the system support on-line network traffic monitoring through interface with the traffic control and monitoring systems	4
3	Does the system support recording of traffic data and formation of historical series and statistics	4
5	Does the system support traffic demand modelling?	3
7	Does the system support the evaluation of short-term and long-term traffic measures?	3
8	Does the system support near real-time traffic status representation for the whole network	4
Air quality modelling		
9	Does the system support emissions modelling based on near real-time traffic measurements?	5
10	Does the system support emissions modelling based on modelled traffic data?	5
11	Does the system support pollutants dispersion modelling at the street and area levels?	3

Questions about Functional Requirements <i>To which extent are the following requirements implemented satisfactory?</i> Rating 1-5 (1=not at all satisfactory 5=very satisfactory) When the rating is below 4, please ask for an explanation		S C O R E
12	Does the system support recording of monitored pollutant levels and modelled data?	5
13	Does the system support background pollution modelling?	5
15	Does the system support air quality modelling based on current traffic levels and on predefined traffic and demand management scenarios?	4
16	The system shall support evaluation of the environmental effect of short and long term transport policies	4

Comments:

- General) The panel recommended that care be taken when presenting the HEAVEN information to non-specialists. The vast diversity of functions and information should not be applied to problems which are outside the scale of the validity of the results (e.g. the traffic modelling is valid at the scale of a km², but may be inaccurate for traffic modelling within a single street. Hence the implementation of traffic measures that impact upon a single street may be out of the scope of the application of the HEAVEN system.)
- 1) and 3) The system will allow functions 1 and 3 but they are not explicitly supported, since they are out of the scope of the intended applications of the system.
- 5), 7), 8) The system features an hourly status representation of traffic based on **modelled** data. The represented traffic status is not identical to the widely available traffic status information produced for traveller information (which is produced independently of HEAVEN). The HEAVEN traffic status is more comprehensive (the network is much denser) but less reliable (there are more underlying modelling assumptions). Hence the panel concluded that while the HEAVEN traffic status is an advance in the understanding and modelling of traffic emissions, it should not be used for traffic management.
- 11) Street level pollution modelling is not yet available.
- 15), 16) Evaluation of the environmental impacts of transport policies is possible as a result of the HEAVEN system, but it must be taken into account that its reliability and accuracy depend on the characteristics of the model producing the traffic data.

Questions about understandable information Rating 1-5 (1=not at all satisfactory 5=very satisfactory) When the rating is below 4, please ask for an explanation		SCORE
Information presentation		
1	Does the system support data representation via maps, charts and generic tables	5
Environmental maps		
2	How do you rate the comprehensibility of the HEAVEN information presentation via <i>maps</i>	4
3	How easy to use is the HEAVEN information presentation via <i>maps</i>	4

	Questions about understandable information Rating 1-5 (1=not at all satisfactory 5=very satisfactory) When the rating is below 4, please ask for an explanation	SCORE
5	How useful is the HEAVEN information presentation via <i>maps</i> to manage urban mobility	4
6	How do you rate the comprehensibility of the colour codes used on the <i>maps</i>	5
7	Is the level of geographical detail presented in maps satisfactory	3
	Traffic maps	
8	How do you rate the comprehensibility of the HEAVEN information presentation via <i>maps</i>	
9	How easy to use is the HEAVEN information presentation via <i>maps</i>	
10	How useful is the HEAVEN information presentation via <i>maps</i> to manage urban mobility	
11	How do you rate the comprehensibility of the colour codes used on the <i>maps</i>	
12	Is the level of geographical detail presented in maps satisfactory	
	Traffic charts and generic tables	
13	How do you rate the comprehensibility of the HEAVEN information presentation via <i>charts and generic tables</i>	
14	How easy to use is the HEAVEN information presentation via <i>charts and generic tables</i>	
15	How useful is the HEAVEN information presentation via <i>charts and generic tables to manage urban mobility</i>	
	Information output	
16	Does the system support attention and alarm pollutant levels achievement detection and forecast	5
17	Is Information presentation driven through a suitable MMI	4
18	Are you satisfied with the update interval of the information	5
	Operator interface	
19	Does the system interface support operator driven scenario definition	4
20	Is the system interface for support of operator driven definitions comprehensible?	4
21	Is the system interface for support of operator driven definitions easy to use?	4
22	Does the system interface drive the operator through the tasks related to off-line evaluation of the impact of scenarios on the environment	4
23	Are these procedures comprehensible	4
24	Are these procedures easy to use	4

Comments:

General) The panel was very satisfied with the content and design of the information platform.

Meteo) The information platform presents the meteorological information which is used in the modelling chain. The panel expressed that this information should be presented in a way that non-specialists would easily understand .

2) The emission maps present problems that are difficult to see if a given quasi-real-time situation is above or below "normal" conditions. A relative indicator is desirable. However for a relative indicator a reference situation or a reference range of variations must be chosen. For emissions depending on type of day, time of day, temperature, and traffic volume, the panel recommended that the historical emission situations be used to determine a good reference. It was proposed that different maps between the actual situation and the reference be included, although some members of the panel commented that there were then too many information sources.

2) to 7) Street-level pollutant concentrations will not be present at the start.

2) to 7) The idea of animated 24h-sequences was welcomed by the panel.

5) The choice of pollutants was confirmed.

6) It was recommended that the critical concentration levels be indicated beside each map.

7) The geographical detail seemed to be insufficient for the maps of sub-regions.

8) to 15) In earlier discussions, the local partners had decided to include the widely available traffic status map (www.sytadin.equipement.gouv.fr) in the HEAVEN information platform, rather than presenting the traffic status modelled by the HEAVEN traffic modelling tool. The reason was to avoid the possible contradiction of traveller information which might be delivered by two different systems. . (See also comment 8 above).

However, the panel pointed out that the widely available traveller information data is not actually used in the HEAVEN modelling chain, and that this inconsistency can lead to misinterpretations. It was recommended that emphasis be placed on the fact that the modelled traffic status of HEAVEN is not equivalent to the traveller information.

17) The development of the website has not been achieved yet.

General comment:

The panel welcomed the idea of a compact "bulletin" presenting the up to date information concerning meteorology, traffic, pollutant emissions and concentrations.

It was recommended that this "quick synthetic information" be separated from the more detailed explanatory pages.